General Specifications

Item	Specification
Adhesives	
Weatherstrip and Rubber Adhesive E8AZ-19552-A	ESB-M2G14-A
Lubricants	
Silicone Lubricant C0AZ-19553-AA	ESR-M13P4-A
Sealers	
HB Fuller E709-19554-B	ESB-M4G162-A
3M Strip Caulk-Black 051135-08578	ESB-M4G32-A
Silicone Gasket and Sealant F7AZ-19554-EA	WSK-M2G343-A4

Body

Body and Sheet Metal

The body:

- Is a unibody open cowl structure.
- Is constructed of a lightweight, all-steel material with removable bolted hood (16612), front fenders (16005), doors, and luggage compartment lid.

Insulation

Insulation is comprised of urethane, PVC, and recycled felt. Insulation is installed:

- Under the roof panel (50202).
- Above and below the instrument panel (04304).
- On the cowl sides.
- Over the front and rear floor areas.
- On a Coupe, in the B and C-pillar sections.
- Under the hood.

Body Sealer Types And Applications

Liquid Butyl Sealer

HB Fuller E709-19554-B or equivalent meeting Ford Specification ESB-M4G162-A:

- Does not run.
- Is fast drying.
- Remains semi-elastic.
- Can be used for seam sealing on the floorpan, wheelhouse, body rocker panels, door openings, and drip rails.

Caulking Cord

3M Strip Caulk-Black 051135-08578 or equivalent meeting Ford specification ESB-M4G32-A:

- Is a heavy-bodied, plastic base with a filler.
- Is commonly known as perma-gum.
- Is used on spot-welds holes, around moulding clips, and between surfaces not sealed with a gasket.

Weatherstrip Adhesive

Weatherstrip and Rubber Adhesive E8AZ-19552-A or equivalent meeting Ford specification ESB-M2G14-A:

- Is a quick drying, strong adhesive designed to hold weatherstripping onto all body panels and surrounding metal.

Silicone Lubricant

Silicone Lubricant C0AZ-19553-AA meeting Ford specification ESR-M13P4-A:

- Is used to keep the door and the window weatherstrip pliable and soft.
- Should be applied to the weatherstrip at every lubrication period.
- Makes the door easier to close.
- Retards weatherstrip squeaks.
- Retards weatherstrip wear.
- Helps retain door window alignment by reducing friction between the glass frame and the rubber weatherstrip.
- Should not be used prior to painting.

Body System

Inspection and Verification

Leaks

NOTE: Trim will reveal the location of most leaks.

1. Remove any trim or carpet in the general area of the leak.
2. Road test or water test the vehicle.
3. Inspect for a dust pattern around the area in question. Inspect for water paths near and above the area in question.
4. Some leaks can be located by placing bright light under the vehicle, removing any necessary trim or carpet, and inspecting the interior of the body at joints and weld lines.

Noise

Wind noise, rattles, and their sources are detected by driving the vehicle at highway speeds. The vehicle should be driven in four different directions with all of the windows closed, the radio off, the blower motor off, and all of the ventilation ducts open.

Most wind noise leaks will occur at the door and window seals or at the sheet metal joints in the door or the door opening.

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
• Dust and Water Leaks	• Body sealer missing. • Opening in weldings or body joints. • Components not fully installed. • Components missing. • Components damaged.	• REMOVE trim panel. CHECK for leaks and SEAL with appropriate sealer. ROAD TEST or WATER TEST for leaks. RECHECK for leaks; USE light under the vehicle with trim removed. CHECK interior of body at joints and weld lines.
• Dust/Water Leaks at Floor Pan and Grommets	• Missing or damaged plugs and/or grommets.	• CHECK plugs for proper installation. REPLACE if necessary.
• Door Drain Holes Collecting Water	• Holes clogged with mud or road tar.	• CLEAN drain holes of dirt and foreign material. CHECK drain holes regularly. TEST the system for normal operation.

• Wind Noise, Air Entering Vehicle Through Small Holes in Body	• Leaks at door and window seals or sheet metal joints in doors or door openings.	• SEAL leaks with Silicone Gasket and Sealant F7AZ-19554-EA meeting Ford specifications WSK-M2G343-A4. ROAD TEST.
• Rattles	• Loose objects in wells, pillars, and quarter panels. • Misalignment (if tightening bolts does not eliminate rattle). • Weatherstripping and/or anti-squeak material.	• CHECK doors by carefully STRIKING underside of door with a rubber mallet. LISTEN for loose objects in door. REPAIR. TIGHTEN body bolts and screws. • ADJUST the alignment of the doors or panels. • APPLY additional sealer. INSTALL in proper location to eliminate rattle.

Torque Specifications

Description	Nm	lb-ft	lb-in
Hood latch support screws	12	9	—
Hood latch retaining screws	12	9	—
Hood latch control handle and cable retaining screws	3	—	27
Hood latch support nuts	10	—	89
Fender bolts	12	9	—
Grille opening panel bolts	3	—	27
Rear hood hinge to body bolts	9	—	80
Front hood hinge to body bolts	13	10	—

Front End Body Panels

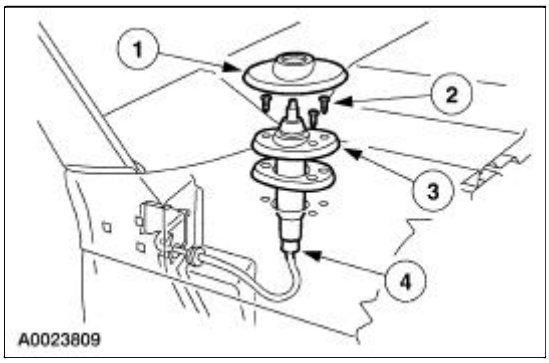
The front end body panel components consist of the following:

- air deflectors
- cowl grille
- fenders
- fender splash shields
- hood
- hood hinges
- hood weatherstrip
- radiator grille opening panel

Fender

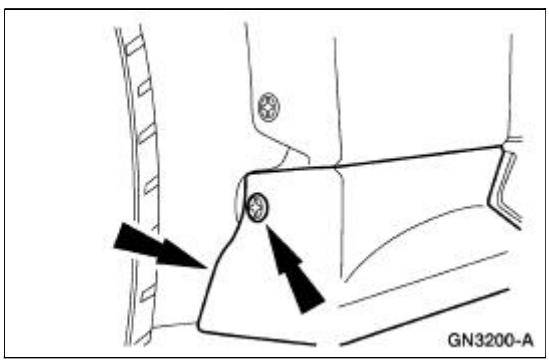
Removal and Installation

1. On the RH fender, remove the antenna base.
    1. Remove the antenna base cap.
    2. Remove the screws.
    3. Remove the antenna base.
    4. Disconnect the antenna cable from the antenna base.

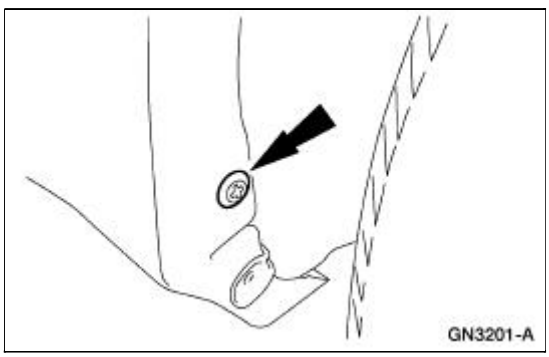


2. Remove the front bumper cover. For additional information, refer to Section 501-19 .

3. Remove the screw, the two pin-type retainers and the front rocker panel moulding.

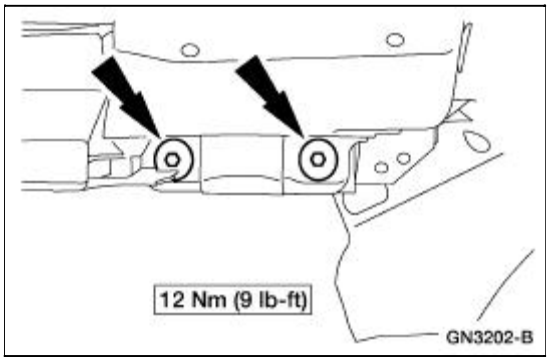


4. Remove the fender splash shield screw.

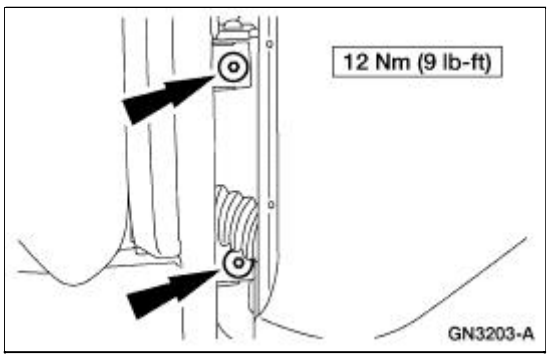


5. **NOTE:** Position the fender splash shield aside.

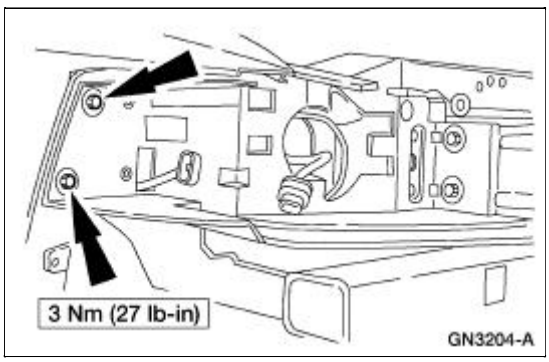
Remove the lower fender bolts and, if equipped, remove the shims.



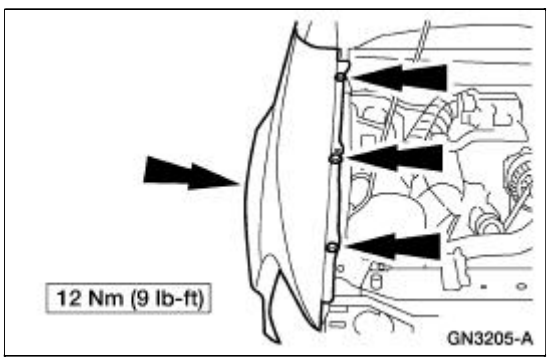
6. Through the door opening, remove the inner fender bolts.



7. Remove the radiator grille opening panel to fender bolts.



8. Remove the upper bolts and the fender.



9. **NOTE:** On the RH fender, feed the antenna cable through the fender opening.

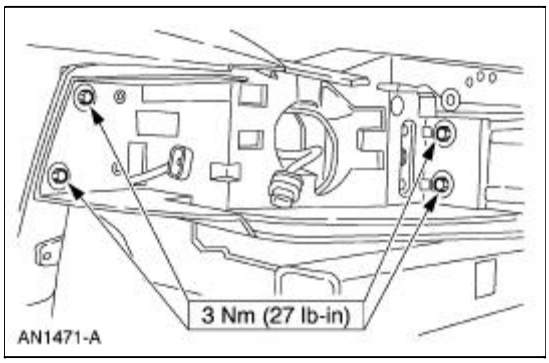
To install, reverse the removal procedure.

- Check the fender alignment and adjust as needed.

Radiator Grille Opening Panel

Removal and Installation

1. Remove the front bumper cover. For additional information, refer to Section 501-19 .
2. Remove the eight bolts (four on each side) and the radiator grille opening panel.



3. To install, reverse the removal procedure.

General Specifications

Item	Specification
Premium Long Life Grease XG-1-C or XG-1-K	ESA-M1C75-B
Silicone Lubricant (Aerosol) F5AZ-19553-AA	ESR-M13P4-A
Multi-Purpose Grease Spray XL-5	ESB-M1C93-B
Flowable air dry paintable caulk	ESB-M4G24-A
Door clearance: bottom of the door to the rocker panel	3.0-7.0 mm (0.118-0.275 in) parallel top to bottom within 2.0 mm (0.08 in)
Door clearance: front and rear of the door to the body	3.0-7.0 mm (0.118-0.275 in) parallel with the body opening within 1.0 mm (0.04 in)
Door flushness: door to the front fender	-1.0-0.00 mm (-0.04-0.00 in)

Torque Specifications

Description	Nm	lb-ft	lb-in
Door latch striker plate bolts	25	18	—
Door hinge nuts and bolts	30	22	—
Luggage compartment lid hinge bolts	30	22	—
Luggage compartment lid hinge nuts	13	10	—
Rear spoiler nuts/screws	9	—	80

Body Closures

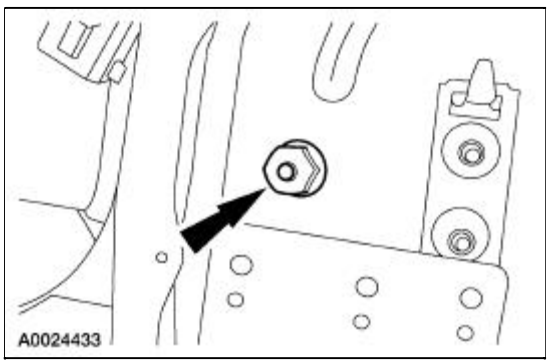
The body closures consist of the following components:

- door checks
- front door
- front door latch strikers
- front door hinges
- front door opening weatherstrips
- hood
- hood (Cobra) with heat extractor scoops
- hood (Mach I) with shaker opening
- hood heat extractor scoops (Cobra)
- hood hinges
- hood support rod
- hood weatherstrip
- luggage compartment lid
- luggage compartment lid hinges
- luggage compartment lid hydraulic lifts
- luggage compartment lid latch striker
- luggage compartment lid weatherstrip

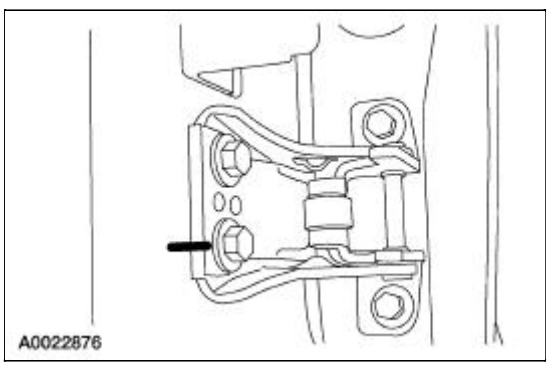
Hinge Adjustment

NOTE: The door should be adjusted for even and parallel fit with the body opening and surrounding panels as well as making sure that the anti-chuck pin is not binding on convertible models.

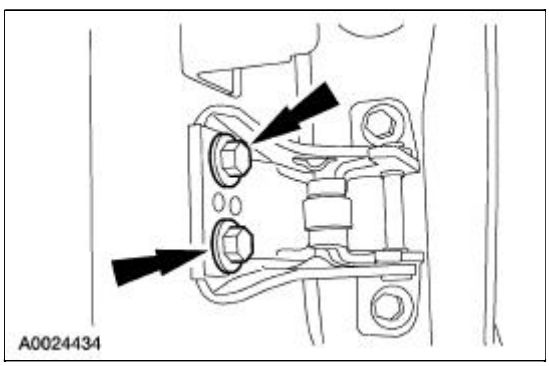
1. Remove the A-pillar lower trim panel.
2. Position the electrical connectors aside.
3. Loosen the lower front door hinge-to-body nut enough to permit movement.



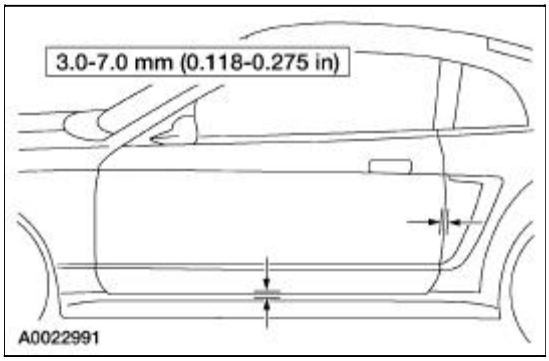
4. Remove the fender. For additional information, refer to Section 501-02 .
5. Mark the position of the upper and lower front door hinges to the body to use as reference points.



6. Loosen the four upper and lower front door hinge-to-body bolts enough to permit movement.

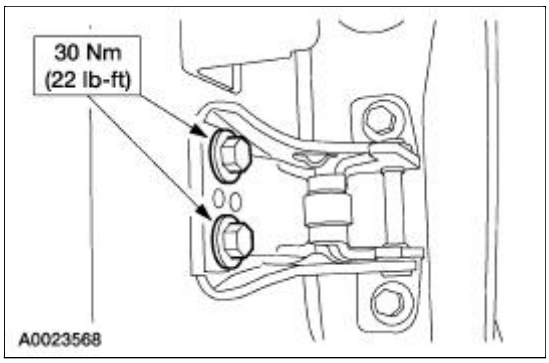


7. Adjust the front door to specification.

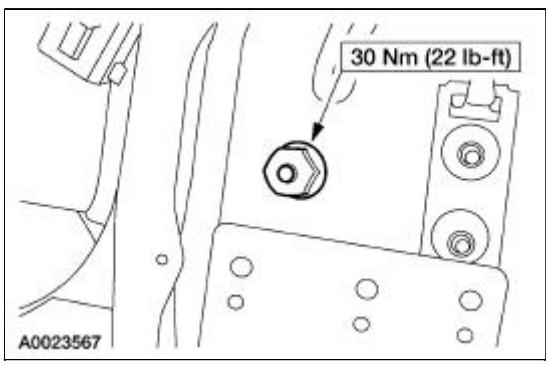


8. **NOTE:** After adjusting the door hinge, verify that the door can be closed easily and fits tightly.

   Tighten the front door hinge to body bolts.



9. Tighten the front door hinge to body nut.



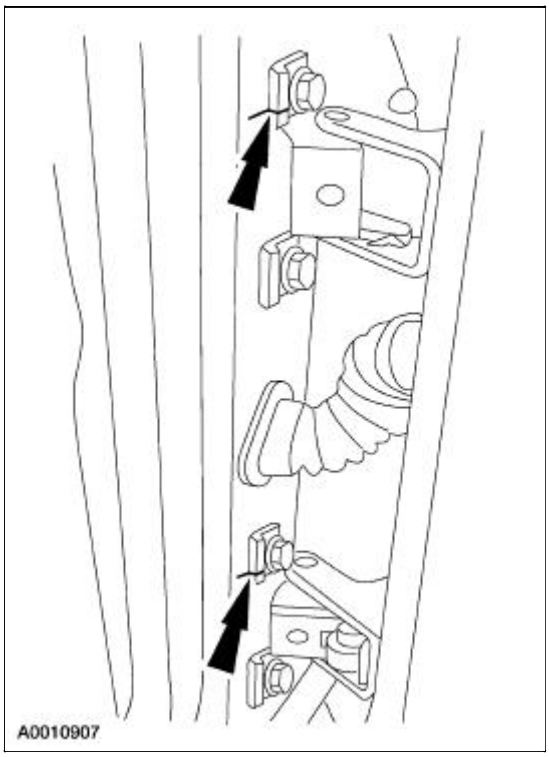
10. Install the electrical connectors.
11. Install the A-pillar lower trim panel.
12. Install the fender. For additional information, refer to Section 501-02 .

Door Alignment

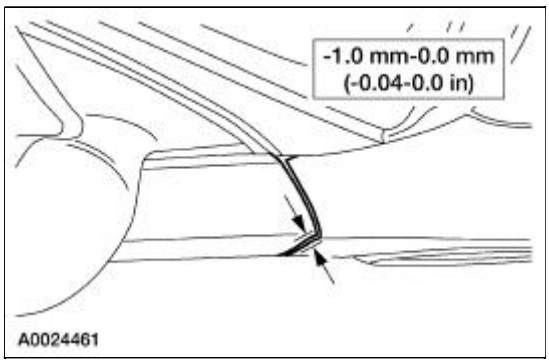
NOTE: The door should be adjusted for even and parallel fit with the body opening and surrounding panels as well as making sure that the anti-chuck pin is not binding on convertible models.

1. Mark the position of the front door hinges to the front door to use as reference points.

2. Loosen the front door hinge-to-front door bolts enough to permit movement.

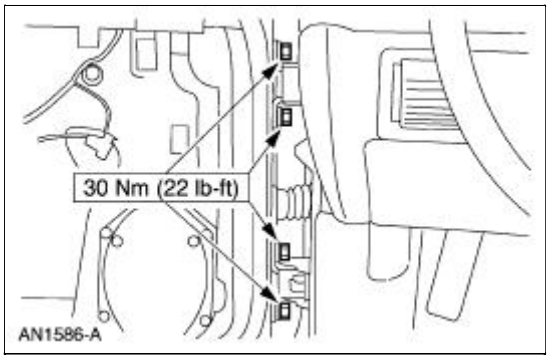


3. Adjust the front door alignment to specification.



4. **NOTE:** After aligning the door, verify that the door can be closed easily and fits tightly.

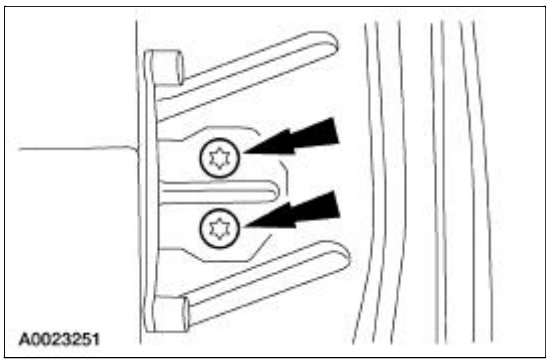
   Tighten the front door hinge-to-front door bolts.


30 Nm (22 lb-ft)
AN1586-A

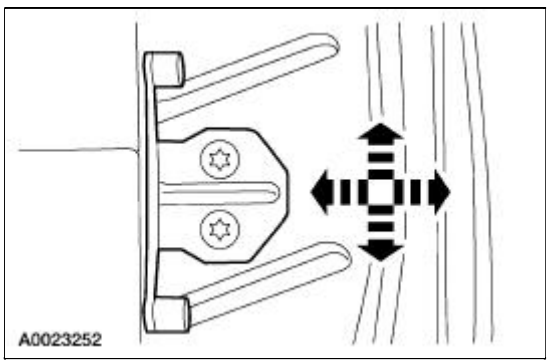
Striker Adjustment

NOTE: After adjusting the door latch striker plate, verify that the door can be closed easily and fits tightly.

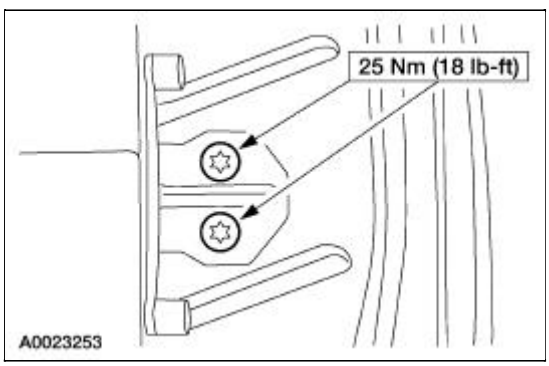
1. Loosen the door latch striker plate bolts.



2. Reposition the door latch striker plate from side to side or up and down as necessary.



3. Tighten the door latch striker plate bolts.



4. Check the adjustment. Repeat the procedure as necessary.

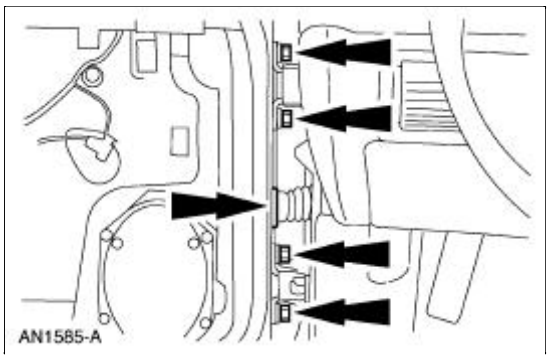
Door

Removal

1. Remove the door trim panel. For additional information, refer to Section 501-05 .
2. Disconnect the necessary electrical connectors to remove the harness and grommet from the door.
3. **NOTE:** This procedure requires an assistant.

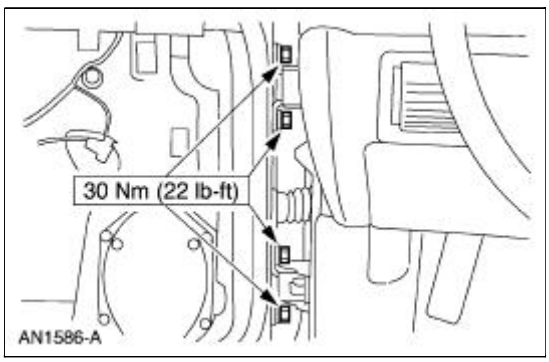
   NOTE: Mark the location of the door hinge on the door.

   Remove bolts and the door.



Installation

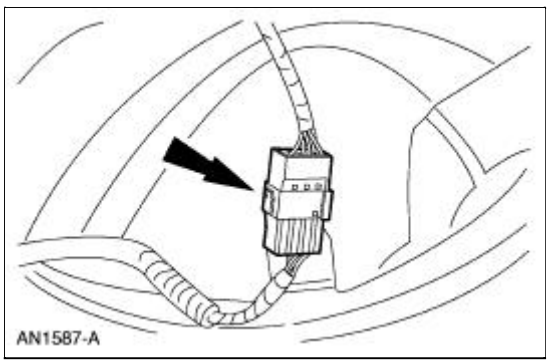
1. To install, reverse the removal procedure.



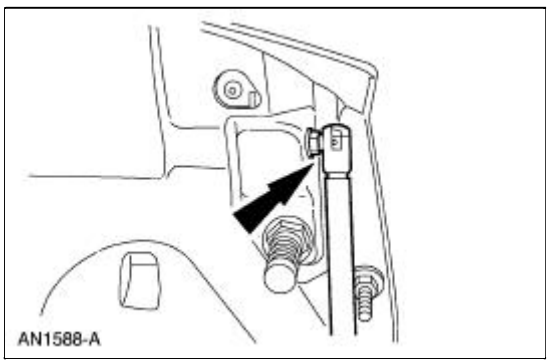
Luggage Compartment Lid —Hinge

Removal

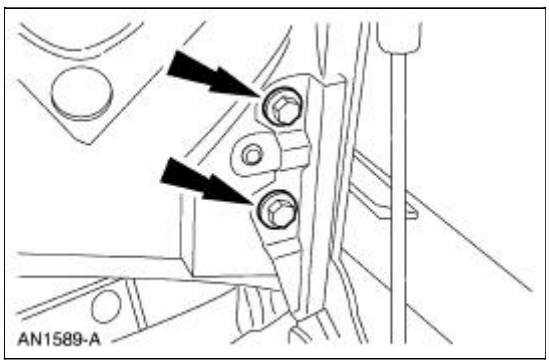
1. Disconnect the electrical connector.



2. Remove the lift cylinder.

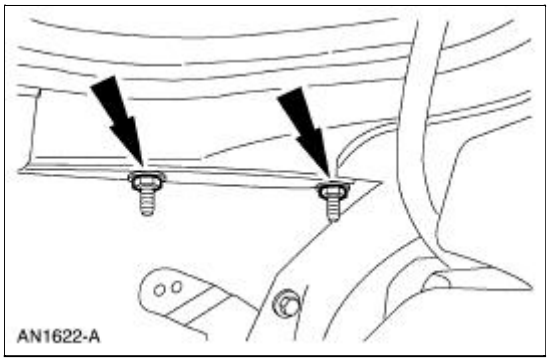


3. Remove the luggage compartment lid hinge bolts.



4. **NOTE:** Remove the sealer around the luggage compartment lid hinge if necessary.

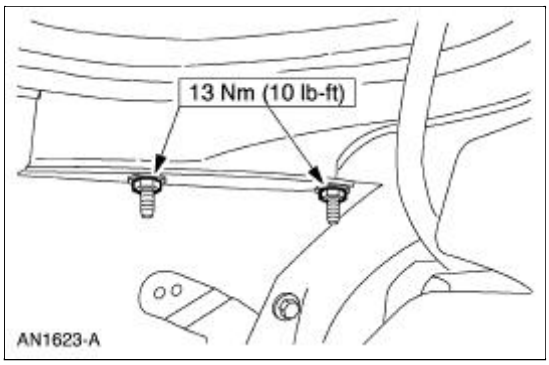
   Remove the nuts and the luggage compartment lid hinge.

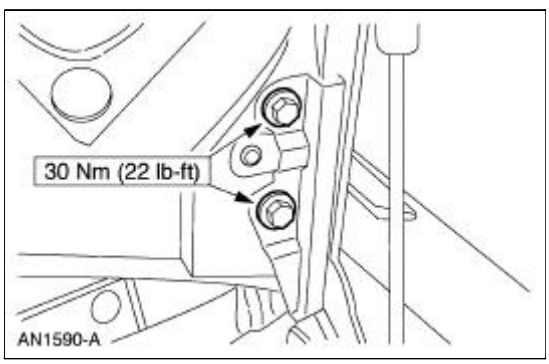


Installation

1. **NOTE:** If removed, apply new sealer.

   To install, reverse the removal procedure.





General Specifications

Item	Specification
Adhesives	
Headliner Adhesive F1VY-19562-A	WSS-M2G355-B

Torque Specifications

Description	Nm	lb-ft
Safety belt guide bolt	40	30
Safety belt anchor bolt	40	30
Rear seat backrest bolster bolts	11	8
Rear seat backrest bolts	11	8

Interior Trim

The interior trim consists of:

- A-pillar lower trim panels
- door trim panels
- headliner (coupe)
- package tray trim panel (coupe)
- quarter trim panels
- upper quarter trim panels (coupe)
- scuff plates
- sun visors
- tether anchor covers (coupe)
- windshield side garnish mouldings

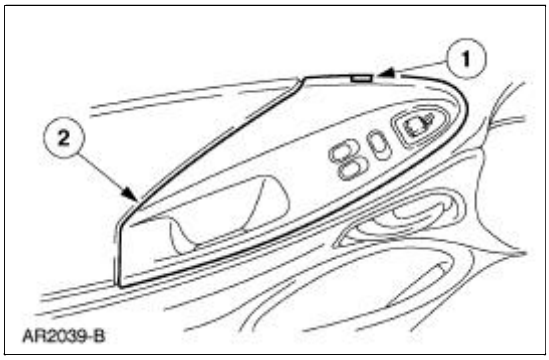
Trim Panel —Door

Removal

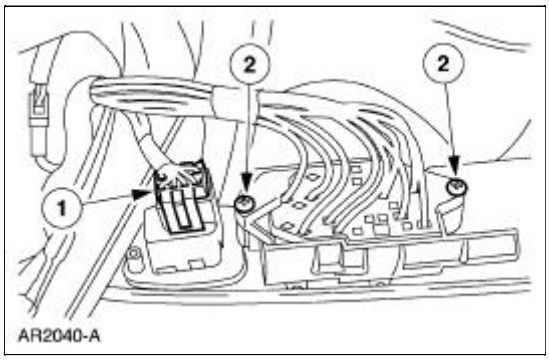
All vehicles

1. **CAUTION: Use a shop towel or similar material between the tool and the front door trim panel or damage to the front door trim panel may occur.**

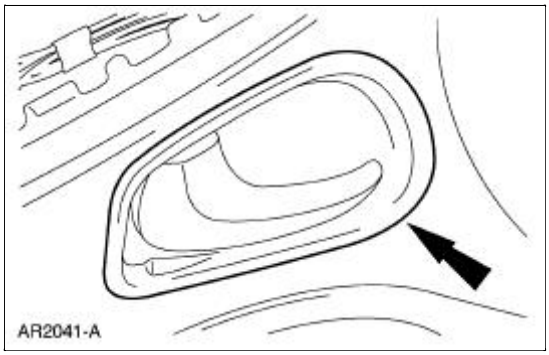
   Position the window regulator switch plate (14527) aside.
   1. Pull at the service notch.
   2. Lift to release the clip at the rear edge.



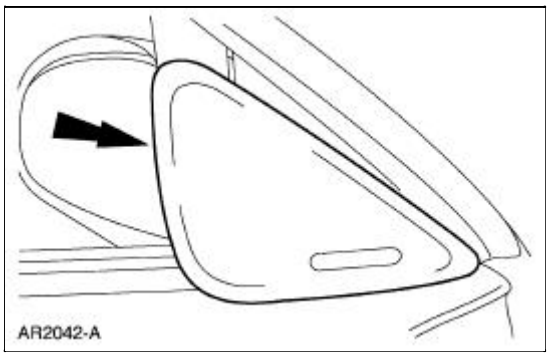
2. Remove the window regulator switch plate.
   1. Disconnect the power mirror electrical connector.
   2. Remove the screws and the window regulator switch plate.



3. Remove the door latch release handle cup (22634).

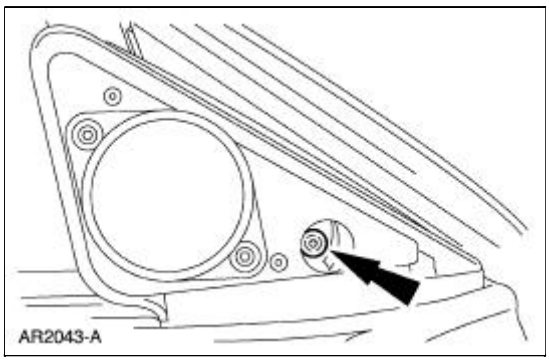


4. Remove the cover.



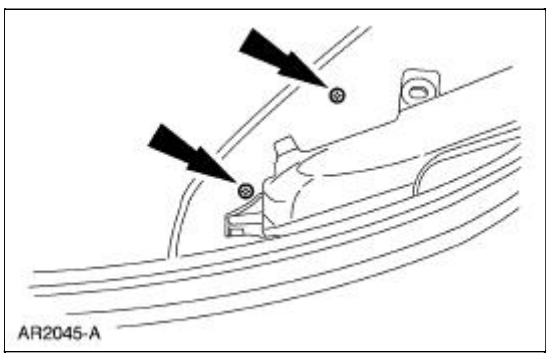
Vehicles with Mach 460 Premium Sound System

5. Remove the screw and the speaker.
    - Disconnect the electrical connector.

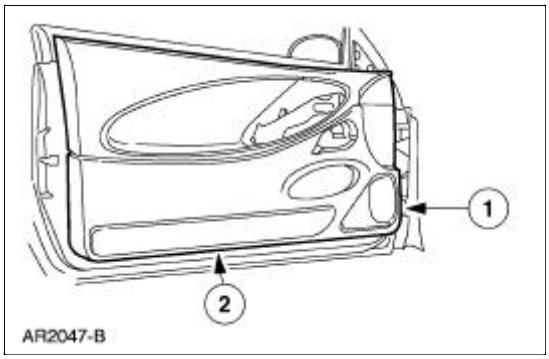


All vehicles

6. Remove the screws.



7. Remove the door trim panel (23942).
    1. Remove the pin-type retainer.
    2. Lift up the door trim panel to remove.



Installation

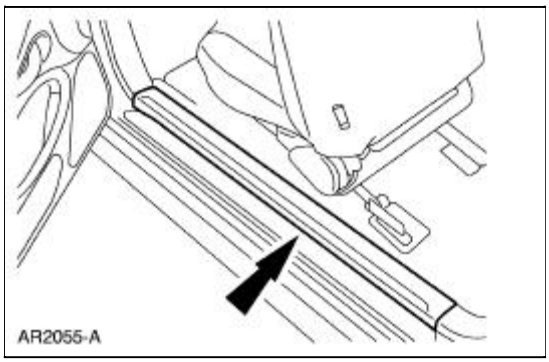
1. To install, reverse the removal procedure.

Trim Panel —Quarter, Coupe

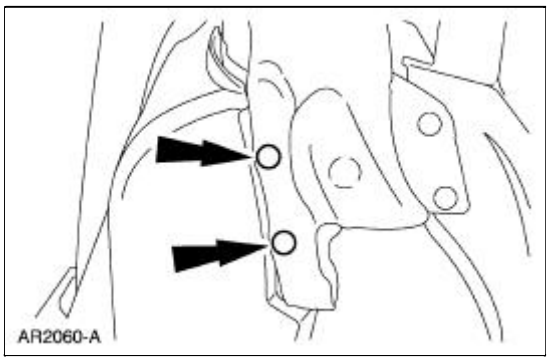
Removal and Installation

1. Remove the upper quarter trim panel. For additional information, refer to Trim Panel—Upper Quarter in this section.

2. Remove the scuff plate.

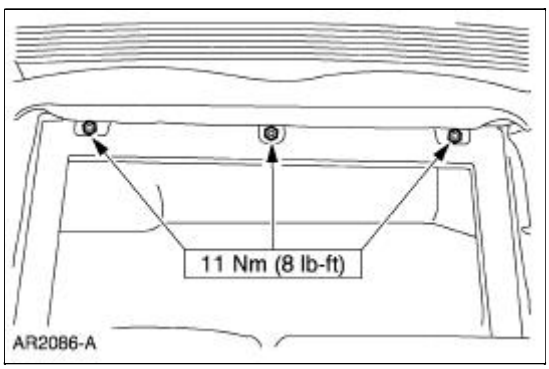


3. Remove the pin-type retainers.

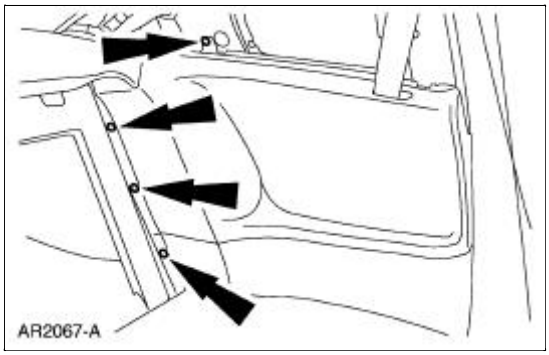


4. Lower the rear seat backrests.

5. Remove the bolts and the rear seat backrest bolster.



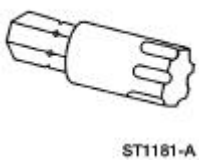
6. Remove the quarter trim panel pin-type retainers.



7. Remove the lower quarter trim panel.
8. To install, reverse the removal procedure.

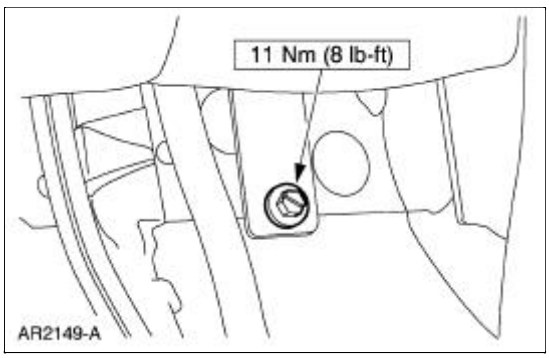
Trim Panel —Quarter, Convertible

Special Tool(s)

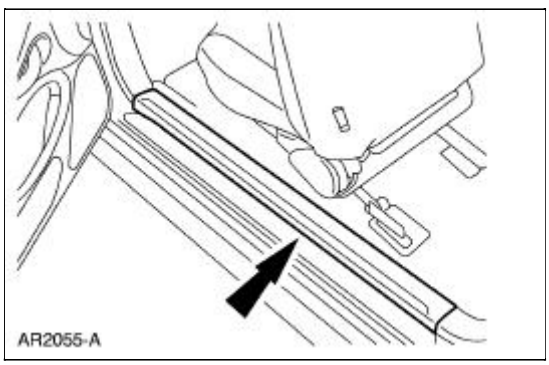
 ST1181-A	Safety Belt Bolt Bit 501-010 (T77L-2100-A)

Removal and Installation

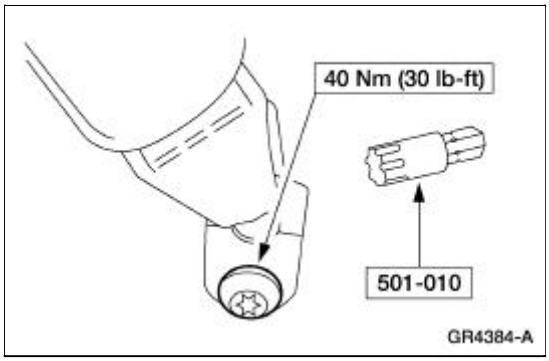
1. Lower the convertible top to the full down position.
2. Remove the rear seat cushion.
3. Remove the two bolts and the rear seat backrest.



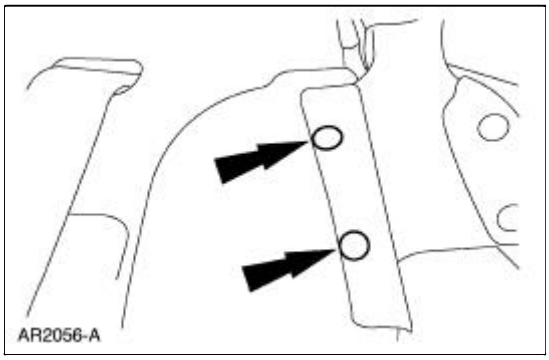
4. Remove the scuff plate.



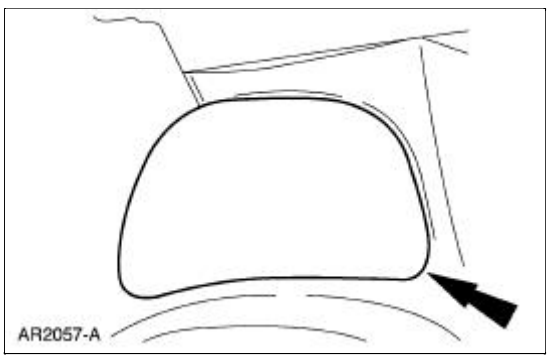
5. Using the special tool, remove the front safety belt anchor bolt.



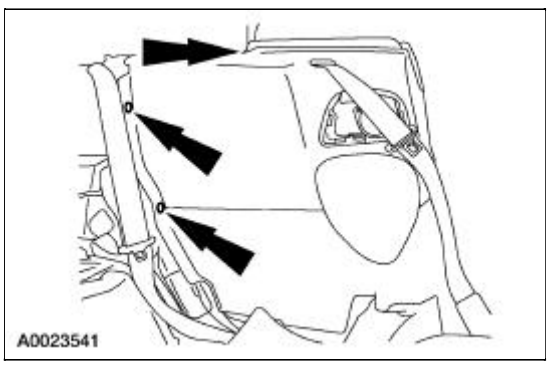
6. Remove the pin-type retainers.



7. Remove the speaker grille.



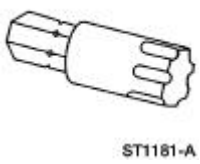
8. Remove the pin-type retainers and the quarter trim panel.



9. To install, reverse the removal procedure.

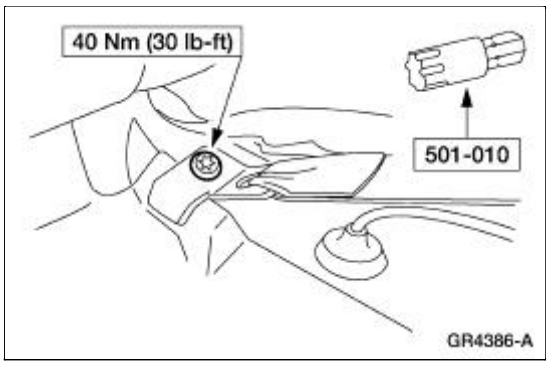
Trim Panel —Upper Quarter

Special Tool(s)

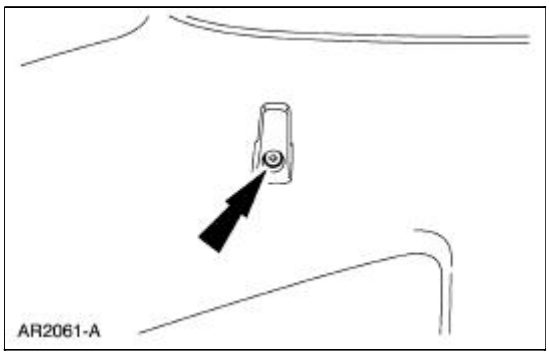
 ST1181-A	Safety Belt Bolt Bit 501-010 (T77L-2100-A)

Removal and Installation

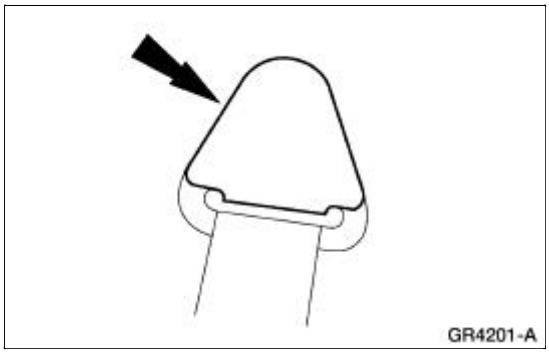
1. Remove the rear seat cushion.
2. Using the special tool, remove the rear safety belt anchor bolt.



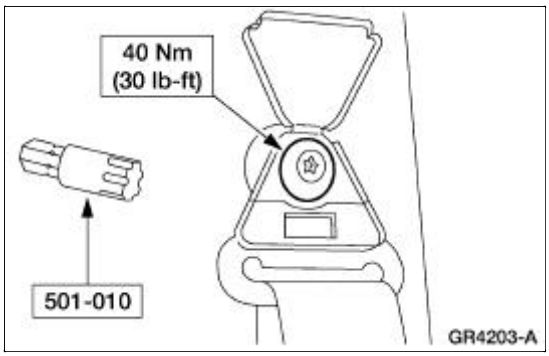
3. Remove the screw and the coat hook.



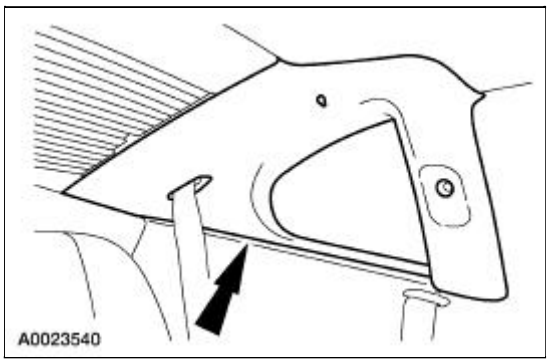
4. Open the front safety belt guide bolt cover.



5. Using the special tool, remove the front safety belt guide bolt.



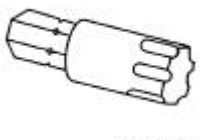
6. Remove the upper quarter trim panel.



7. To install, reverse the removal procedure.

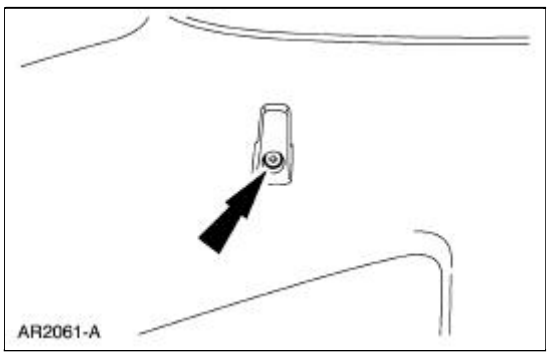
Trim Panel —Package Tray

Special Tool(s)

 ST1181-A	Torx Bit, Safety Belt Bolt 501-010 (T77L-2100-A)

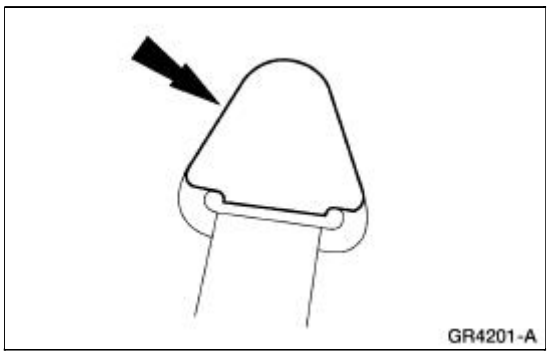
Removal and Installation

1. Remove the screw and the coat hook.

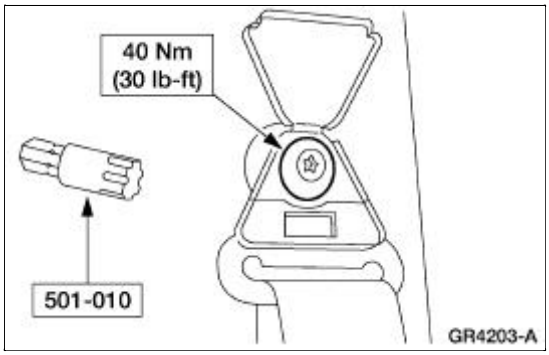

AR2061-A

2. **NOTE:** Inspect the shoulder safety belt guide cover for damage. If the shoulder safety belt guide cover is damaged or the cover does not remain closed, install a new shoulder safety belt guide cover.

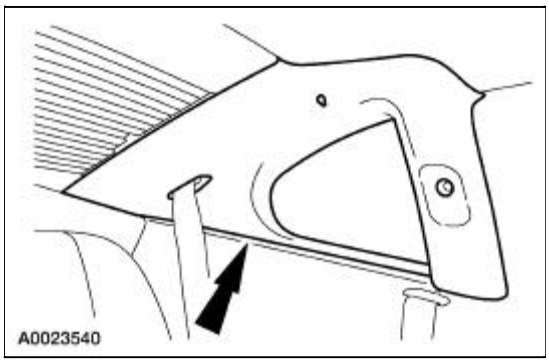
   Open the safety belt cover.


GR4201-A

3. Using the special tool, remove the front safety belt guide bolt and position the safety belt guide aside.

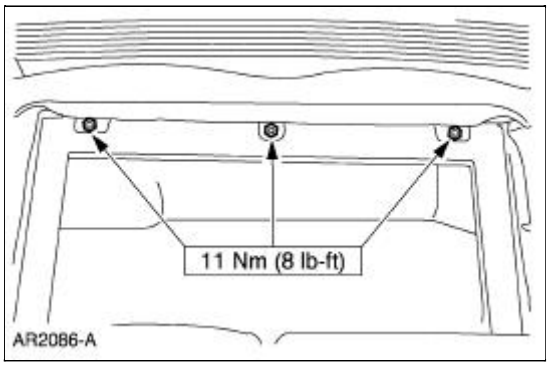


4. Position the upper trim panel aside.

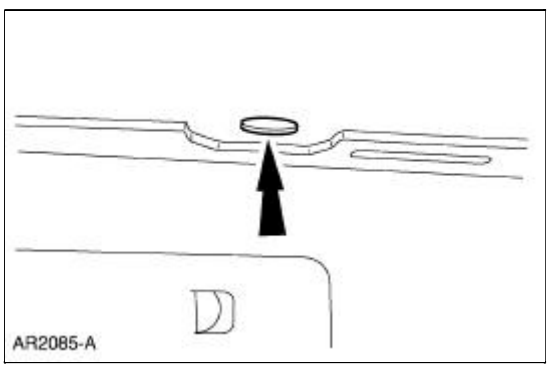


5. Lower the seat backrests.

6. Remove the bolts and the rear seat backrest bolster.



7. Remove the two pin-type retainers and the package tray trim panel.



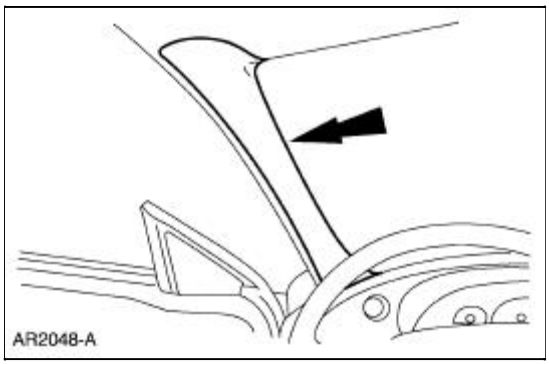
8. To install, reverse the removal procedure.

Headliner

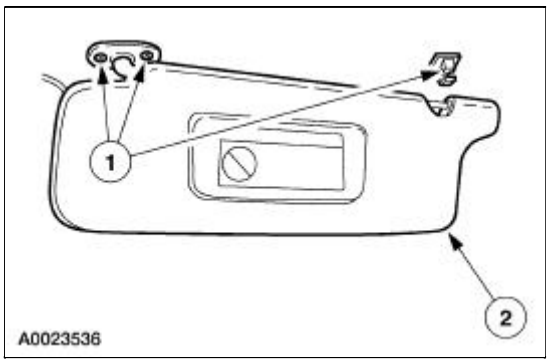
Removal

1. Remove the two upper quarter panels. For additional information, refer to Trim Panel—Upper Quarter in this section.

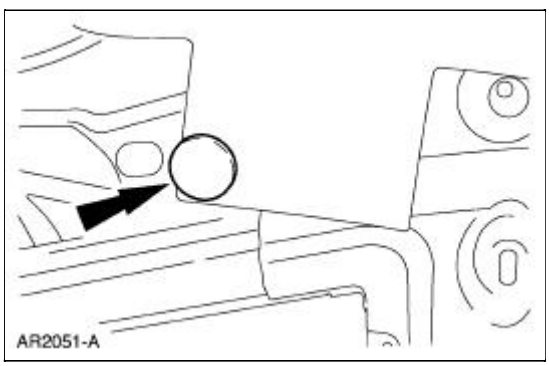
2. Remove the two windshield side garnish mouldings.



3. Remove the two sun visors.
   1. Remove the six screws.
   2. Position the sun visors aside.
      - If equipped, disconnect the electrical connectors.

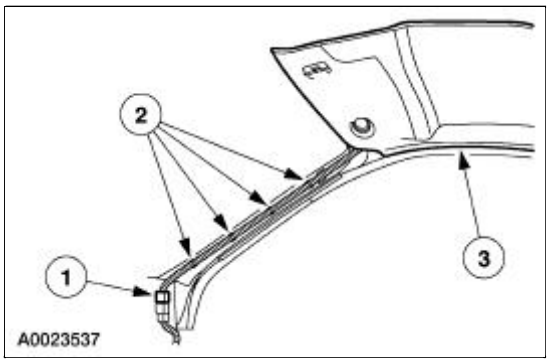


4. Remove the two pin-type retainers.



5. **CAUTION: Folding the headliner will result in damage to the headliner.**

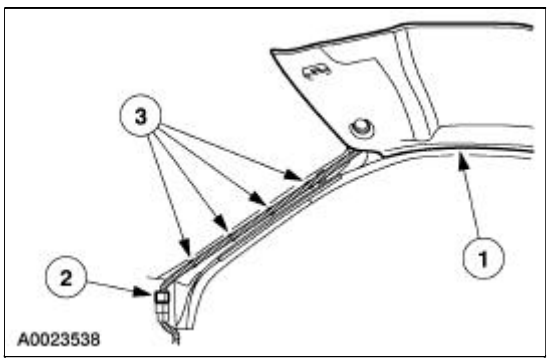
Remove the headliner.
1. Disconnect the electrical connector.
2. Release the wiring harness locators.
3. Remove the headliner.



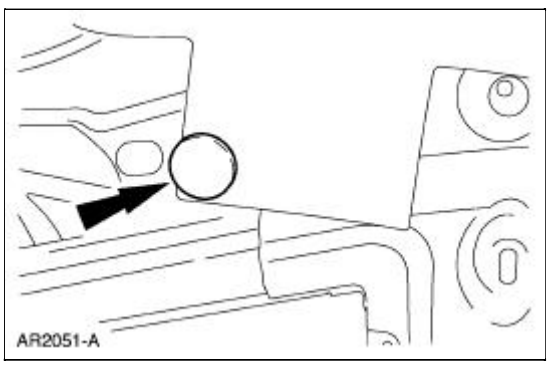
Installation

1. **CAUTION: Folding the headliner will result in damage to the headliner.**

Install the headliner.
1. Position the headliner.
   - Apply Headliner Adhesive F1VY-19562-A meeting Ford specification WSS-M2G355-B, to the headliner using the existing pattern.
2. Connect the electrical connector.
3. Engage the wiring harness locators.

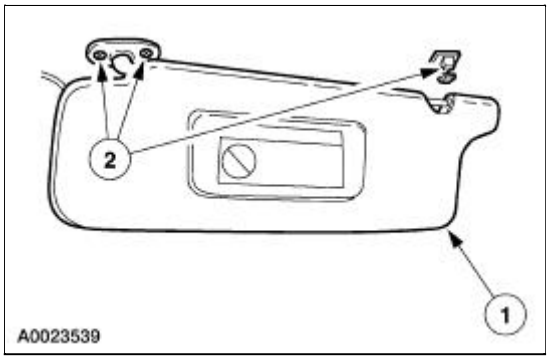


2. Install the two pin-type retainers.

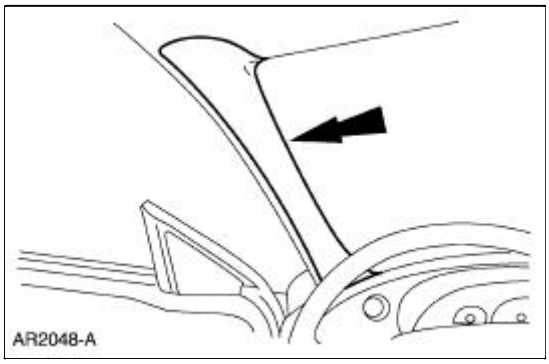


3. Install the two sun visors.

1. Position the sun visors.
    - If equipped, connect the electrical connectors.
2. Install the screws.



4. Install the two windshield side garnish mouldings.



5. Install the two upper quarter trim panels. For additional information, refer to Trim Panel—Upper Quarter in this section.

Torque Specifications

Description	Nm	lb-in
Hood scoop	3	27
Radiator grille screws	6	53
Rear spoiler nuts/screws	9	80
Roof side moulding screws	3	27
Roof side moulding nuts	3	27

Exterior Trim and Ornamentation

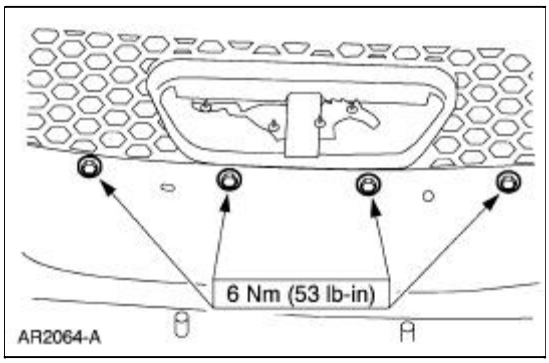
The exterior trim and ornamentation consists of the following components:

- body side scoop
- hood scoop (if equipped)
- front spoiler (Mach 1)
- radiator grille
- rear spoiler (if equipped)
- rocker panel moulding
- roof side moulding

Radiator Grille

Removal and Installation

1. Remove the front bumper cover. For additional information, refer to Section 501-19 .
2. Remove the screws and the radiator grille.

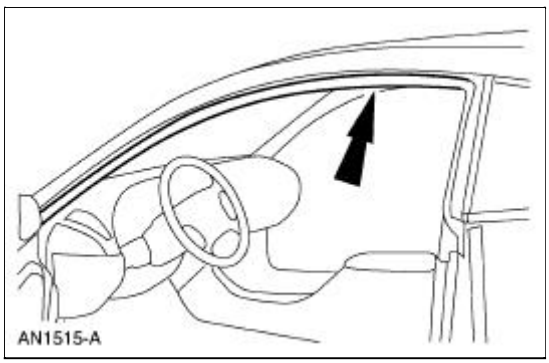


3. To install, reverse the removal procedure.

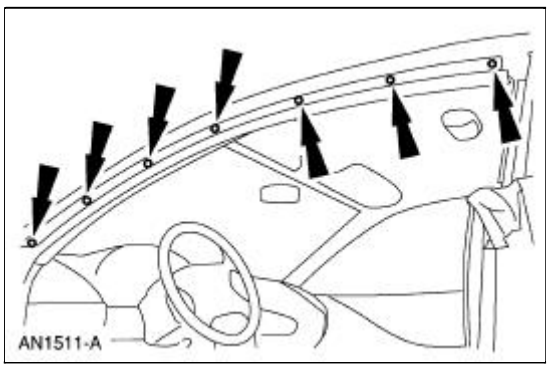
Moulding —Roof Side

Removal and Installation

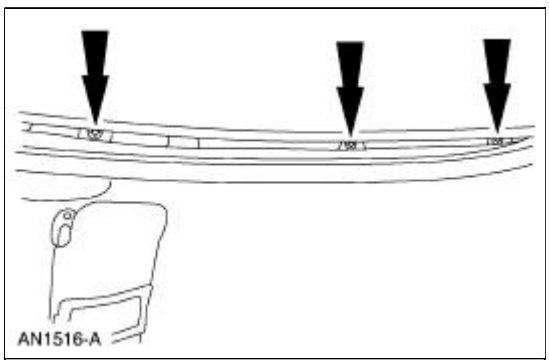
1. Remove the weatherstrip.



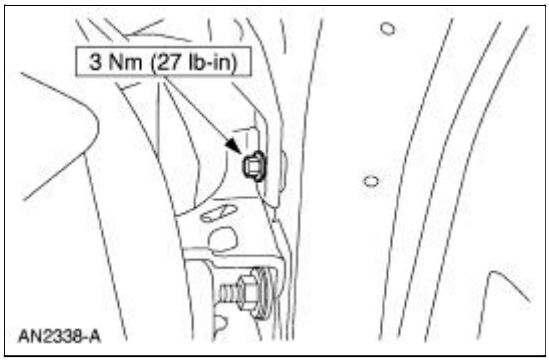
2. Remove the exterior roof side moulding screws.



3. Remove the interior roof side moulding screws.

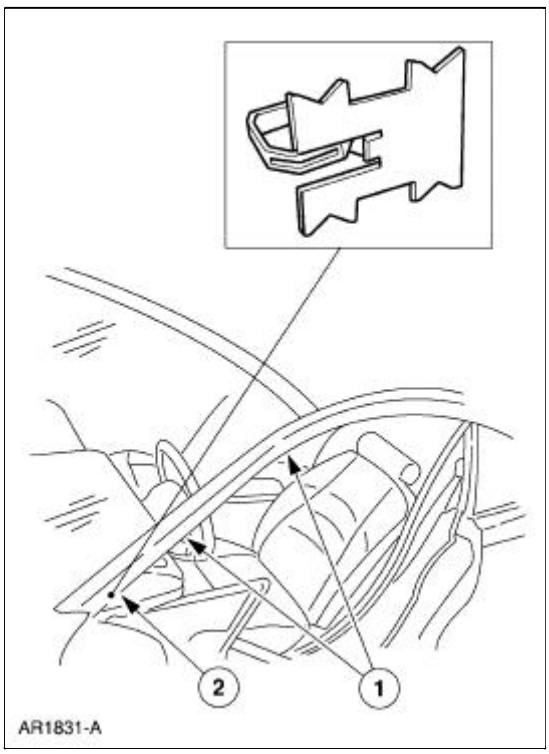


4. Remove the roof side moulding screw.



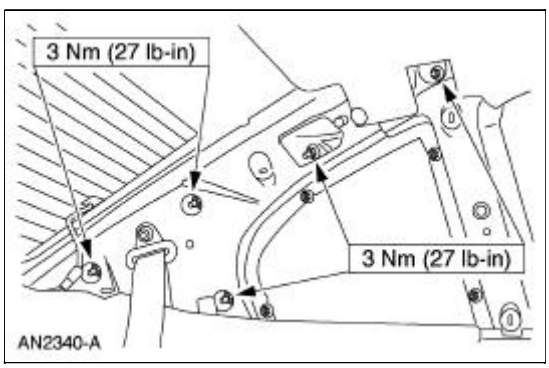
5. Release the clips.
    1. Lift up to release the two clips.
    2. **NOTE:** Grasp the roof side moulding and lift up to release the money clip.

       Remove the money clip.



6. Remove the upper quarter trim panel. For additional information, refer to Section 501-05 .

7. Remove the nuts and the roof side moulding.

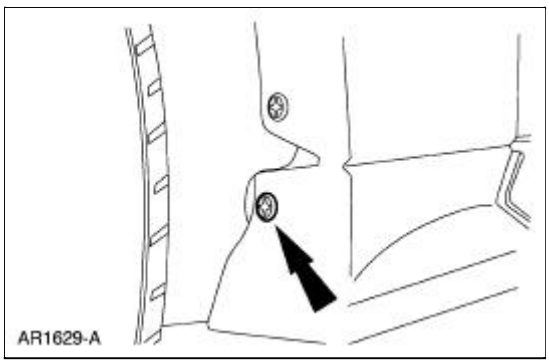


8. To install, reverse the removal procedure.

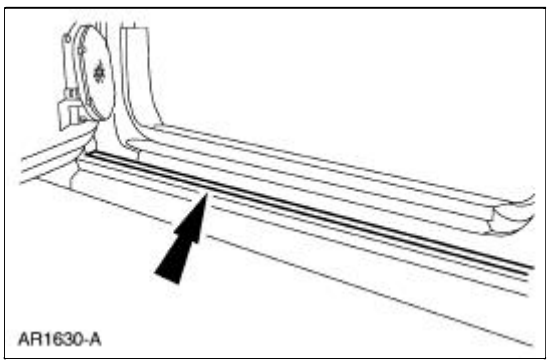
Moulding —Rocker Panel

Removal

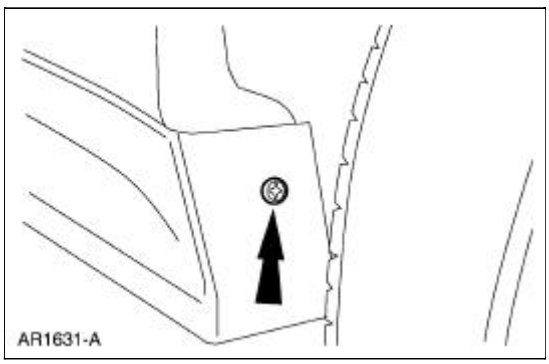
1. Remove the front rocker panel moulding screw.



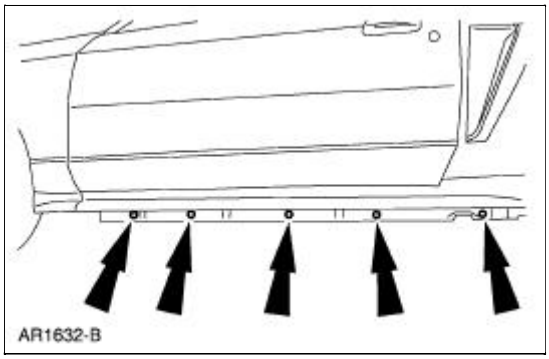
2. Remove the strip.



3. Remove the rear rocker panel moulding screw.



4. Remove the pin-type retainers and the rocker panel moulding.



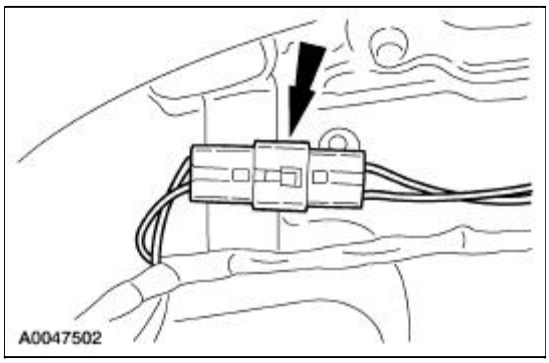
Installation

1. To install, reverse the removal procedure.

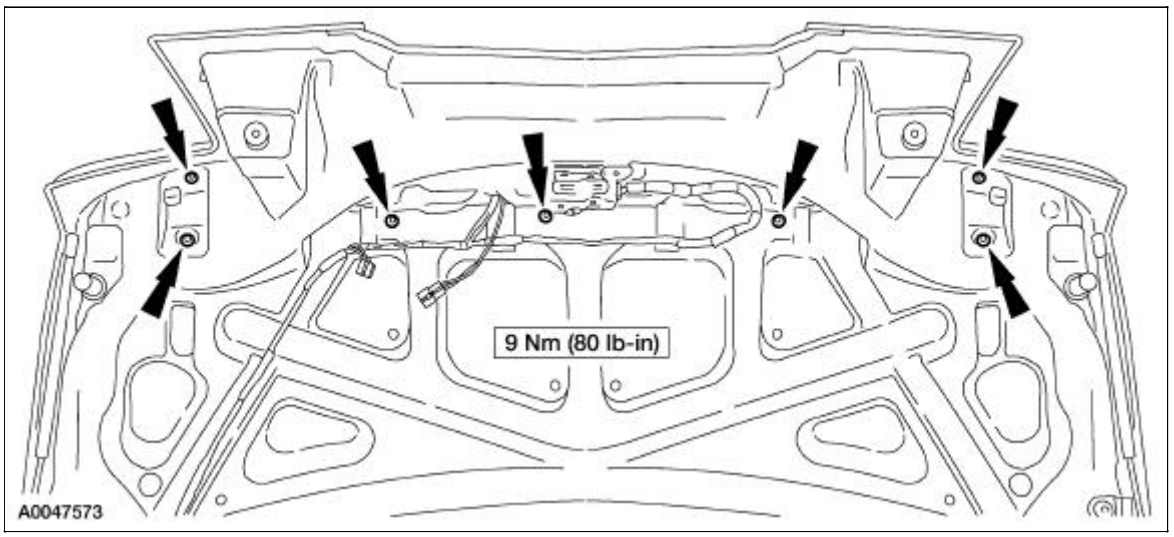
Rear Spoiler

Removal and Installation

1. Open the luggage compartment lid.
2. Disconnect the high mounted stoplamp electrical connector.

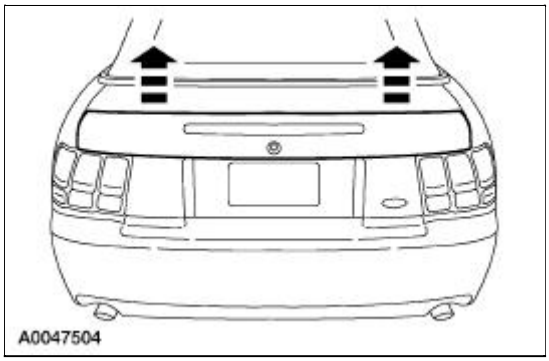


3. Remove the screws and the nuts.



4. **CAUTION: Use care not damge the pin-type retainers and pin-type retainer seals during removal.**

   Release the spoiler from the two pin-type retainers in an upward motion.



5. To install, reverse the removal procedure.
    - Inspect the pin-type retainer seals. Install new pin-type retainer seals if damaged.

Torque Specifications

Description	Nm	lb-ft	lb-in
Exterior rear view mirror nuts	12	9	—
Exterior rear view mirror motor screws	7	—	62

Rear View Mirrors

The rear view mirror system consists of the following components:

- exterior rear view mirror
- exterior rear view mirror control
- exterior rear view mirror glass
- exterior rear view mirror motor
- interior rear view mirror
- exterior rear view mirror (Cobra) (manual folding)

Rear View Mirrors

Refer to Wiring Diagrams Cell 124 , Power Mirrors for schematic and connector information.

Special Tool(s)

 ST1137-A	73III Automotive Meter 105-R0057 or equivalent
 ST2574-A	Flex Probe Kit 105-R025B or equivalent

Inspection and Verification

1. Verify the customer concern by operating the system.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
● Exterior rear view mirrors ● Interior rear view mirror	● Central junction box (CJB) fuse 19 (15A) ● Wiring harness ● Connections ● Exterior rear view mirror control ● Exterior rear view mirror motor

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom and refer to the Symptom Chart.

Symptom Chart

Refer to the Wiring Diagrams for connector numbers stated in the pinpoint tests.

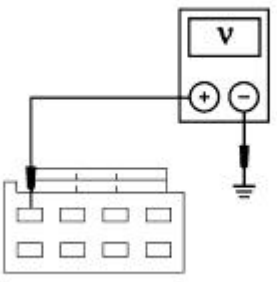
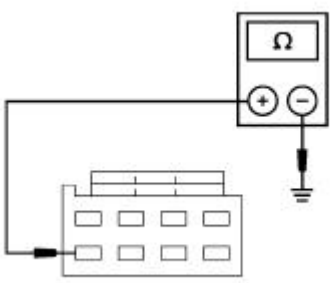
SYMPTOM CHART

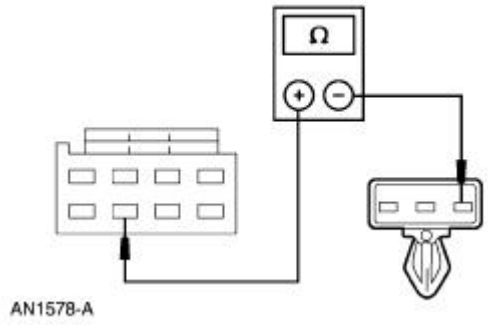
Condition	Possible Sources	Action
● The mirrors are inoperative	● Exterior rear view mirror control.	● Go To Pinpoint Test A .

	• Central junction box (CJB) fuse 19 (15A). • Circuitry.	
• A single mirror is inoperative	• Exterior rear view mirror control. • Exterior rear view mirror motor. • Circuitry.	• Go To Pinpoint Test B .
• A single mirror does not function with switch logic	• Exterior rear view mirror control. • Exterior rear view mirror motor. • Circuitry.	• Go To Pinpoint Test C .

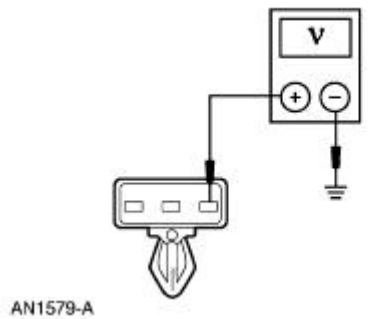
Pinpoint Tests

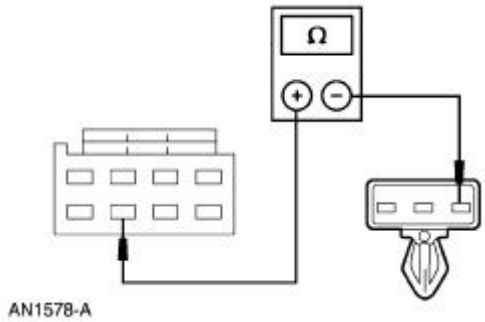
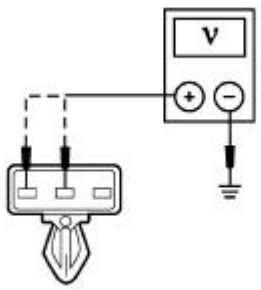
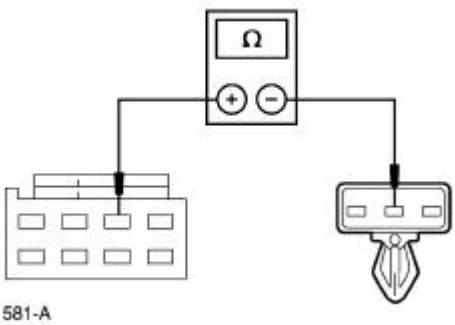
PINPOINT TEST A: THE MIRRORS ARE INOPERATIVE

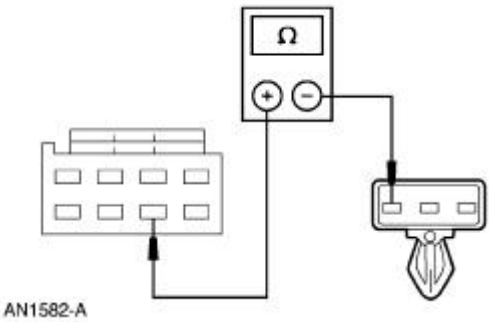
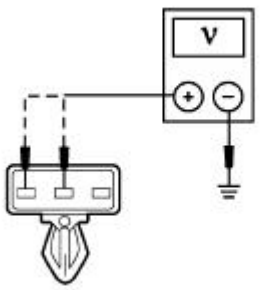
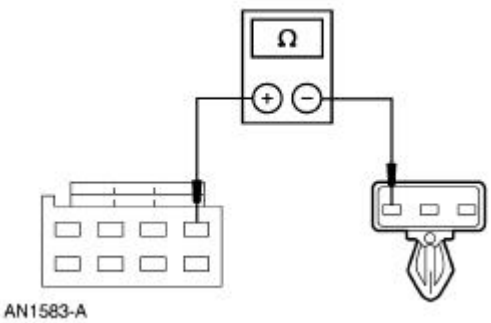
Test Step	Result / Action to Take
A1 CHECK CIRCUIT 326 (WH/VT)	
• Disconnect: Exterior Rear View Mirror Control C527. • Measure the voltage between exterior rear view mirror control C527 pin 1, circuit 326 (WH/VT), harness side and ground.  AN1574-A • **Is the voltage greater than 10 volts?**	**Yes** GO to A2 . **No** REPAIR the circuit. TEST the system for normal operation.
A2 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
• Measure the resistance between exterior rear view mirror control C527 pin 5, circuit 1205 (BK), harness side and ground.  AN1577-A • **Is the resistance less than 5 ohms?**	**Yes** GO to A3 . **No** REPAIR the circuit. TEST the system for normal operation.
A3 CHECK CIRCUIT 542 (YE) FOR AN OPEN	

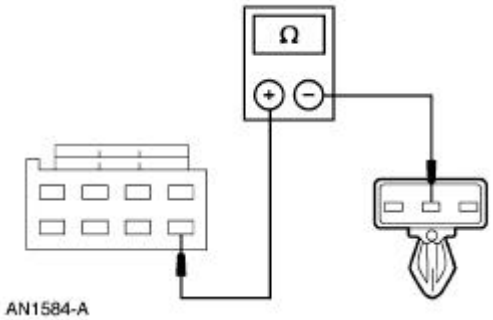
• Measure the resistance between passenger exterior rear view mirror C622 pin C, circuit 542 (YE), harness side and exterior rear view mirror control C527 pin 6, circuit 542 (YE), harness side.  AN1578-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new exterior rear view mirror control. REFER to Switch—Exterior Rear View Mirror Control in this section. **No** REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST B: A SINGLE MIRROR IS INOPERATIVE

Test Step	Result / Action to Take
B1 CHECK THE COMMON FEED INPUT	
• Disconnect: Exterior Rear View Mirror C516 (Driver) C622 (Passenger). • Disconnect the inoperative exterior rear view mirror C516 driver side or C622 passenger side. • Measure the voltage between driver exterior rear view mirror C516 pin C, circuit 542 (YE), harness side and ground; or between passenger exterior rear view mirror C622 pin C, circuit 542 (YE), harness side and ground.  AN1579-A • Select the inoperative side and actuate the exterior rear view mirror control to the down position, then the right position. • **Are the voltages greater than 10 volts?**	**Yes** GO to B3 . **No** GO to B2 .
B2 CHECK CIRCUIT 542 (YE) FOR AN OPEN	
• Disconnect: Exterior Rear View Mirror Control C527. • Measure the resistance between exterior rear view mirror control C527 pin 6, circuit 542 (YE), harness side and driver exterior rear view mirror C516 pin C, circuit 542 (YE), harness side; or between exterior rear view mirror control C527 pin 6, circuit 542 (YE), harness side and passenger exterior rear view mirror C622 pin C, circuit 542 (YE), harness side.	**Yes** INSTALL a new exterior rear view mirror control. REFER to Switch—Exterior Rear View Mirror Control in this section. TEST the system for normal operation.

 AN1578-A ● **Is the resistance less than 5 ohms?**	**No** REPAIR the circuit. TEST the system for normal operation.
B3 CHECK THE UP/DOWN INPUT	
● Measure the voltage between driver exterior rear view mirror C516 pin B, circuit 541(DB), harness side and ground; or between passenger exterior rear view mirror C622 pin A, circuit 544 (VT), harness side and ground.  AN1580-A ● Actuate the exterior rear view mirror control to the up position. ● **Are the voltages greater than 10 volts?**	**Yes** GO to B6 . **No** GO to B4 for driver inoperative or GO to B5 for passenger inoperative.
B4 CHECK CIRCUIT 541 (DB) FOR AN OPEN	
● Disconnect: Exterior Rear View Mirror Control C527. ● Measure the resistance between exterior rear view mirror control C527 pin 3, circuit 541 (DB), harness side and driver exterior rear view mirror C516 pin B, circuit 541 (DB), harness side.  AN1581-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new exterior rear view mirror control. REFER to Switch—Exterior Rear View Mirror Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
B5 CHECK CIRCUIT 544 (VT) FOR AN OPEN	
● Disconnect: Exterior Rear View Mirror Control C527. ● Measure the resistance between exterior rear view mirror control C527 pin 7, circuit 544 (VT), harness side and passenger exterior rear view mirror C622 pin A, circuit 544 (VT), harness side.	**Yes** INSTALL a new exterior rear view mirror control. REFER to Switch—Exterior Rear View Mirror Control in this section. TEST the system for normal

 AN1582-A ● **Is the resistance less than 5 ohms?**	operation. **No** REPAIR the circuit. TEST the system for normal operation.
B6 CHECK THE LEFT/RIGHT INPUT	
● Measure the voltage between driver exterior rear view mirror C516 pin A, circuit 540 (RD), harness side and ground; or between passenger exterior rear view mirror C622 pin B, circuit 543 (DG), harness side and ground.  AN1580-A ● Actuate the exterior rear view mirror control to the left position. ● **Is the voltage greater than 10 volts?**	**Yes** INSTALL a new exterior rear view mirror motor. REFER to Mirror—Motor in this section. TEST the system for normal operation. **No** GO to B7 for driver inoperative or GO to B8 for passenger inoperative.
B7 CHECK CIRCUIT 540 (RD) FOR AN OPEN	
● Disconnect: Exterior Rear View Mirror Control C527. ● Measure the resistance between exterior rear view mirror control C527 pin 4, circuit 540 (RD), harness side and driver exterior rear view mirror C516 pin A, circuit 540 (RD), harness side.  AN1583-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new exterior rear view mirror control. REFER to Switch—Exterior Rear View Mirror Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
B8 CHECK CIRCUIT 543 (DG) FOR AN OPEN	
● Disconnect: Exterior Rear View Mirror Control C527. ● Measure the resistance between exterior rear view mirror control C527 pin 8, circuit 543 (DG), harness side and passenger exterior rear view mirror C622 pin B, circuit 543 (DG), harness side.	**Yes** INSTALL a new exterior rear view mirror control. REFER to Switch—Exterior Rear View Mirror Control in this section. TEST the system for normal



- **Is the resistance less than 5 ohms?**

operation.

No
REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST C: A SINGLE MIRROR DOES NOT FUNCTION WITH SWITCH LOGIC

Test Step	Result / Action to Take
C1 CHECK THE EXTERIOR REAR VIEW MIRROR LOGIC • Disconnect: Exterior Rear View MirrorC516 (Driver), or C622 (Passenger). • Disconnect the suspect exterior rear view mirror C516 driver or C622 passenger. • Measure for voltage or resistance at the suspect exterior rear view mirror harness side, while actuating the exterior rear view mirror control according to the following chart.	**Yes** INSTALL a new exterior rear view mirror motor. REFER to Mirror—Motor in this section. TEST the system for normal operation. **No** GO to C2.

Circuit	Exterior rear view mirror control position	Measure for voltage or resistance
Driver		
540 (RD)	Left	Greater than 10 volts
540 (RD)	Right	Less than 5 ohms
541 (DB)	Up	Greater than 10 volts
541 (DB)	Down	Less than 5 ohms
542 (YE)	Left	Less than 5 ohms
542 (YE)	Right	Greater than 10 volts
542 (YE)	Up	Less than 5 ohms
542 (YE)	Down	Greater than 10 volts

	Exterior rear view mirror control	Measure for voltage or

Circuit	position	resistance
Passenger		
543 (DG)	Left	Greater than 10 volts
543 (DG)	Right	Less than 5 ohms
544 (VT)	Up	Greater than 10 volts
544 (VT)	Down	Less than 5 ohms
542 (YE)	Left	Less than 5 ohms
542 (YE)	Right	Greater than 10 volts
542 (YE)	Up	Less than 5 ohms
542 (YE)	Down	Greater than 10 volts

- **Is the circuit logic OK?**

C2 CHECK THE EXTERIOR REAR VIEW MIRROR CONTROL

- Remove the exterior rear view mirror control. Leave the harness connected.
- Measure for voltage or resistance at exterior rear view mirror control C527 while actuating the exterior rear view mirror control according to the following chart.

Pin	Circuit	Exterior rear view mirror control position	Measure for resistance or voltage
6	542 (YE)	Left	Less than 5 ohms
6	542 (YE)	Right	Greater than 10 volts
6	542 (YE)	Up	Less than 5 ohms
6	542 (YE)	Down	Greater than 10 volts
Driver side selected			
4	540 (RD)	Left	Greater than 10 volts
4	540 (RD)	Right	Less than 5 ohms
3	541 (DB)	Up	Greater than 10 volts
3	541 (DB)	Down	Less than 5 ohms
Passenger side selected			
8	543	Left	Greater than 10

Yes
REPAIR the circuits. TEST the system for normal operation.

No
INSTALL a new exterior rear view mirror control. REFER to Switch—Exterior Rear View Mirror Control in this section. TEST the system for normal operation.

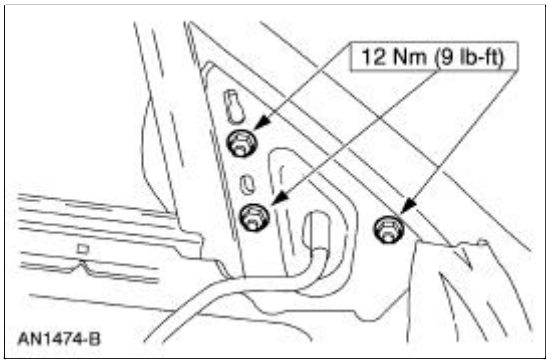
	(DG)		volts
8	543 (DG)	Right	Less than 5 ohms
7	544 (VT)	Up	Greater than 10 volts
7	544 (VT)	Down	Less than 5 ohms

- **Is the circuit logic OK?**

Mirror —Power Exterior Rear View

Removal

1. Remove the door trim panel. For additional information, refer to Section 501-05 .
2. Disconnect the power exterior rear view mirror electrical connector.
3. Remove the nuts and the power exterior rear view mirror.



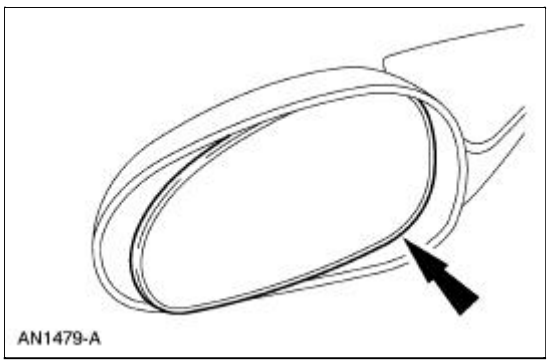
Installation

1. To install, reverse the removal procedure.

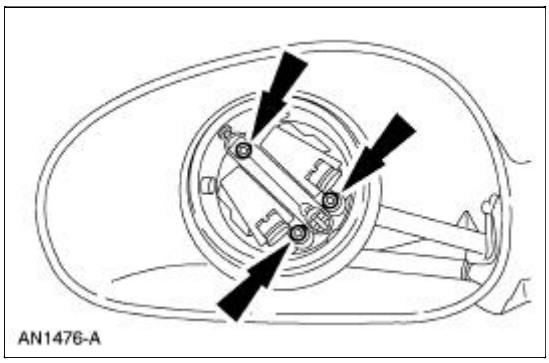
Mirror —Motor

Removal

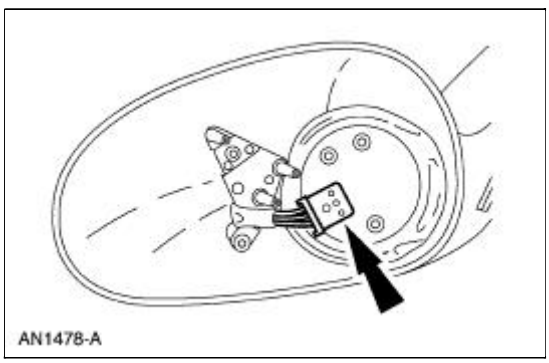
1. Push in the upper edge of the mirror glass to the maximum travel.



2. Grasp the bottom of the mirror glass, pull outward and remove the mirror glass.
3. Remove the mirror motor screws.



4. Disconnect the mirror motor electrical connector.

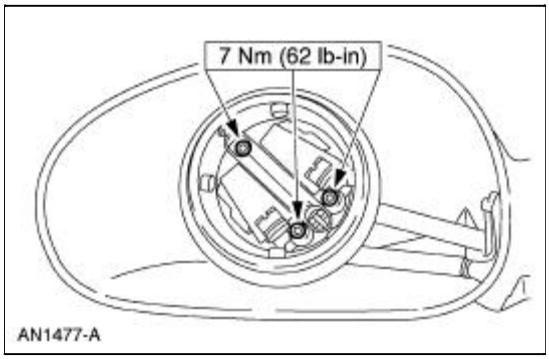


5. Remove the mirror motor.

Installation

1. **NOTE:** When installing the mirror glass, make sure it snaps completely into the mirror motor.

To install, reverse the removal procedure.

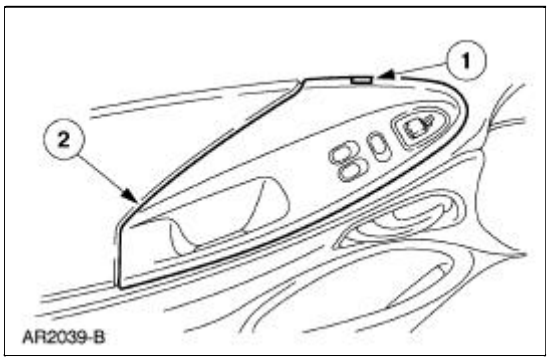


Switch —Exterior Rear View Mirror Control

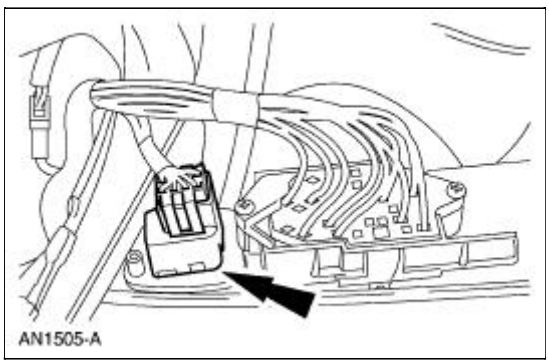
Removal

1. **CAUTION: Use a shop towel or similar material between the tool and the front door trim panel or damage to the front door trim panel may occur.**

   Position the window regulator switch plate aside.
   1. Pull at service notch.
   2. Lift to release the clip at the rear edge.



2. Remove the power exterior rear view mirror control switch.
   - Disconnect the electrical connector.



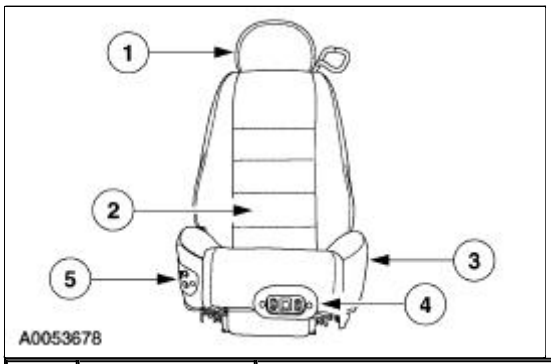
Installation

1. To install, reverse the removal procedure.

Torque Specifications

Description	Nm	lb-ft	lb-in
Front seat track to floorpan bolts and nuts	35	26	—
Front seat track to cushion bolts	20	15	—
Seat latch bolts	27	20	—
Seat backrest latch bolts	55	41	—
Front seat backrest pivot bolt	23	17	—
Rear seat backrest to body bolt	11	8	—
Safety belt guide screws	4	—	35

Seats



Item	Part Number	Description
1	611A08	Front seat backrest head restraint
2	65500	Front seat backrest pad adjuster
3	14C715	Seat control switch
4	14A701	Lumbar control switch
5	—	Bolster and lumbar control switches (Cobra only)

Seats — Front Power

The front power seat features:

- a six-way seat regulator control switch (14A701) located on the front of the seat.
- a seat track (61705) mounted under the seat.
- a seat regulator motor (14547) and gear housing mounted on the seat track (61705).
- an optional power lumbar switch located on the outboard side of the seat (14C715).
- a manual seat backrest release handle on the outboard rear corner of the seat.
- an optional power bolster and lumbar switches located on the inboard side of the seat (Cobra only)

Seats — Power Lumbar Support

NOTE: The pump and solenoid module are serviced as an assembly with the front seat cushion frame (Cobra only). The backrest bolster/lumbar adjusting pads are serviced together and the cushion bolsters are serviced separately.

The power lumbar support system consists of:

- seat control switch (14C715)
- front seat backrest pad adjusting pump (65530)
- front seat adjusting motor drive tube (618B62)
- system wiring and circuit protection
- front seat backrest adjusting hose (65528)
- driver backrest and cushion bolster (Cobra)
- driver bolster and lumbar adjusting pad pump motor and solenoid module (Cobra)
- driver bolster and lumbar control switch (Cobra)
- driver seat cushion adjusting hose (Cobra)

Seats — Front Seat Backrest Latch

NOTE: Under no circumstances are the front seat backrest latch components to be repaired as individual components. If a front seat backrest latch (62648) or component is non-functional or damaged, a new front seat backrest latch must be installed.

A release handle on the outboard rear corner of the seat backrest is manually operated to unlock the front seat backrest latch.

Rear Seat

The rear seat cushion pad and frame (600A88) is retained in the following manner:

- Pins are located on the bottom front of the rear seat cushion pad and frame which secure the rear seat cushion pad and frame to the front floor pan (11135).
- The pins are inserted into locking plates on the floor crossmember with a push button release.
- The bottom of the rear seatback frame is retained with screws to the front floor pan.

Seats

Refer to Wiring Diagrams Cell 120 , Power Seats for schematic and connector information.

Refer to Wiring Diagrams Cell 122 , Power Lumbar Seats for schematic and connector information.

Special Tool(s)

 ST1137-A	73 III Automotive Meter 105-R0057

Inspection and Verification

1. Verify the customer concern by operating the system.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
● Front seat track. ● Seat at limit(s) of travel.	● Battery junction box (BJB) Fuse Power Seat (25A). ● Loose, corroded or damaged connectors. ● Seat regulator control switch. ● Lumbar seat control switch. ● Lumbar motor. ● Bolster and lumbar control switches (cobra)

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom. GO to Symptom Chart .

Symptom Chart

Refer to the Wiring Diagram manual for the connector numbers cited in the pinpoint tests.

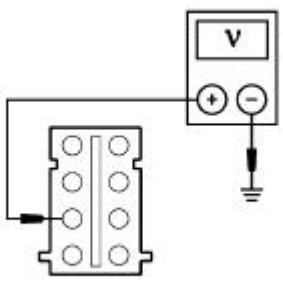
SYMPTOM CHART

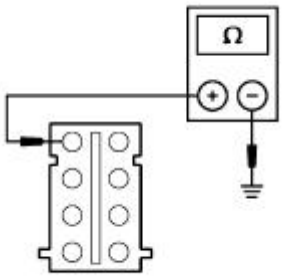
Condition	Possible Sources	Action
● The power seat is inoperative	● BJB Fuse Power Seat (25A). ● Seat regulator control switch. ● Circuitry.	● Go To Pinpoint Test A .

	• Seat track.	
• The power seat does not move vertically — front	• Seat regulator control switch. • Seat track. • Circuitry.	• Go To Pinpoint Test B.
• The power seat does not move vertically — rear	• Seat regulator control switch. • Seat track. • Circuitry.	• Go To Pinpoint Test C.
• The power seat does not move horizontally	• Seat regulator control switch. • Seat track. • Circuitry.	• Go To Pinpoint Test D.
• The power lumbar is inoperative	• Lumbar motor. • Lumbar seat control switch. • Circuitry.	• Go To Pinpoint Test E.
• The power bolster/lumbar is inoperative (Cobra only)	• Bolster/lumbar pump and solenoid module. • Bolster/lumbar seat control switches. • Circuitry.	• Go To Pinpoint Test F.

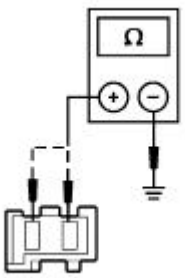
Pinpoint Tests

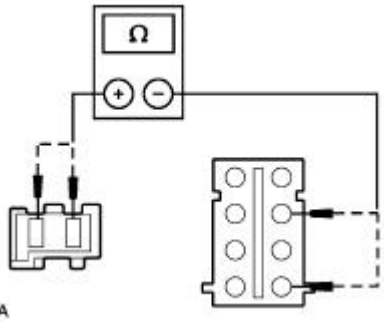
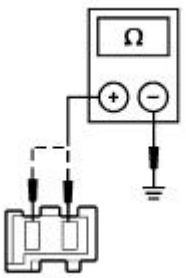
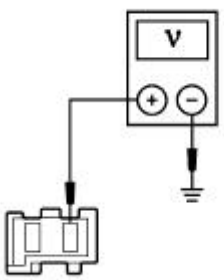
PINPOINT TEST A: THE POWER SEAT IS INOPERATIVE

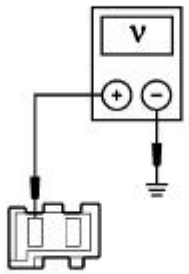
Test Step	Result / Action to Take
A1 CHECK CIRCUIT 566 (DG)	
• Disconnect: Seat Regulator Control Switch C360. • Measure the voltage between seat regulator control switch C360-2, Circuit 566 (DG), harness side and ground.  AR2071-A • **Is the voltage greater than 10 volts?**	**Yes** GO to A2. **No** REPAIR the circuit. TEST the system for normal operation.
A2 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
• Measure the resistance between seat regulator control switch C360-4, Circuit 1205 (BK), harness side and ground.	**Yes** GO to A3. **No** REPAIR the circuit. TEST the system for normal operation.

 AR2074-A ● **Is the resistance less than 5 ohms?**	
A3 CHECK THE SEAT REGULATOR CONTROL SWITCH ● Carry out the seat regulator control switch component test. Refer to Wiring Diagrams. ● **Did the seat regulator control switch pass?**	**Yes** CHECK for obstructed or binding seat track. If no obstructions are found, INSTALL a new seat track. REFER to Seat Track . TEST the system for normal operation. **No** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation.

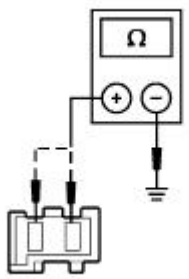
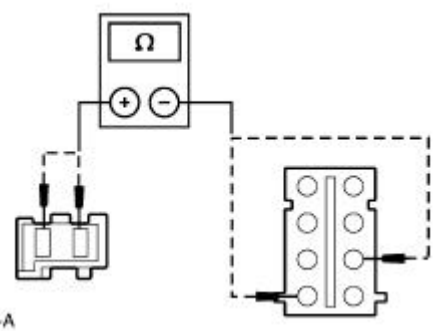
PINPOINT TEST B: THE POWER SEAT DOES NOT MOVE VERTICALLY — FRONT

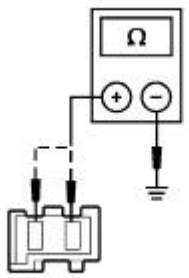
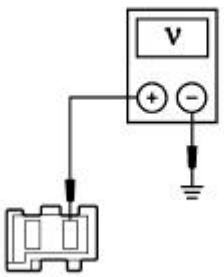
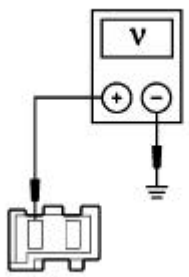
Test Step	Result / Action to Take
B1 CHECK THE MOTOR SUPPLY CIRCUITS ● Disconnect: Front Height Motor C382. ● **NOTE:** Make sure all connectors are connected on the seat. ● Measure the resistance between front height motor C382, Circuit 979 (RD/LB), harness side and ground and between front height motor C382, Circuit 990 (YE/LB), harness side and ground.  AR2075-A ● **Are the resistances less than 5 ohms?**	**Yes** GO to B3 . **No** GO to B2 .
B2 CHECK CIRCUIT 979 (RD/LB) AND 990 (YE/LB) FOR AN OPEN ● Disconnect: Seat Regulator Control Switch C360. ● Measure the resistance between front height motor C382, Circuit 979 (RD/LB), harness side and seat regulator control switch C360-7,	**Yes** INSTALL a new seat regulator

Circuit 979 (RD/LB), harness side; then between front height motor C382, Circuit 990 (YE/LB), harness side and seat regulator control switch C360-5, Circuit 990 (YE/LB), harness side.  AR2076-A ● **Is the resistance less than 5 ohms?**	control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
B3 CHECK CIRCUIT 979 (RD/LB) AND 990 (YE/LB) FOR A SHORT TO GROUND	
● Measure the resistance between front height motor C382, Circuit 979 (RD/LB), harness side and ground and between front height motor C382, Circuit 990 (YE/LB), harness side and ground.  AR2075-A ● **Are the resistances greater than 10,000 ohms?**	**Yes** GO to B4 . **No** REPAIR the circuit. TEST the system for normal operation.
B4 CHECK THE UP POSITION INPUT	
● Connect: Seat Regulator Control Switch C360. ● Measure the voltage between front height motor C382, Circuit 979 (RD/LB), harness side and ground.  AR2077-A ● Actuate the seat regulator control switch to the front UP position. ● **Is the voltage greater than 10 volts?**	**Yes** GO to B5 . **No** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation.
B5 CHECK THE DOWN POSITION INPUT	
● Measure the voltage between front height motor C382, Circuit 990 (YE/LB), harness side and ground.	**Yes** INSTALL a new seat track. REFER to Seat Track . TEST the system for normal operation.

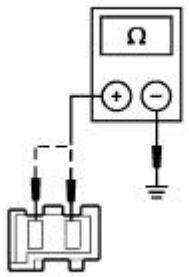
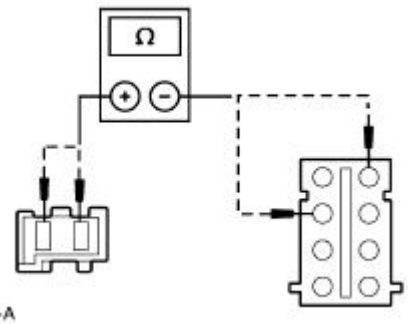
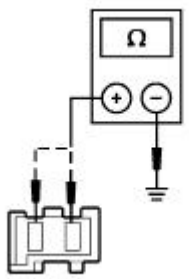
 AR2078-A ● Actuate the seat regulator control switch to the front DOWN position. ● **Is the voltage greater than 10 volts?**	**No** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation.

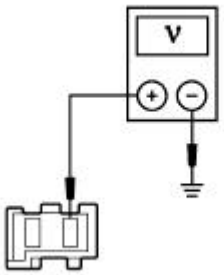
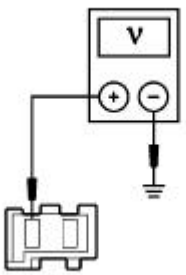
PINPOINT TEST C: THE POWER SEAT DOES NOT MOVE VERTICALLY — REAR

Test Step	Result / Action to Take
C1 CHECK THE MOTOR SUPPLY CIRCUITS	
● Disconnect: Rear Height Motor C363. ● **NOTE:** Make sure all connectors are connected on the seat. ● Measure the resistance between rear height motor C363, Circuit 983 (RD/LG), harness side and ground and between rear height motor C363, Circuit 982 (YE/LG), harness side and ground.  AR2075-A ● **Are the resistances less than 5 ohms?**	**Yes** GO to C3 . **No** GO to C2 .
C2 CHECK CIRCUIT 983 (RD/LG) AND 982 (YE/LG) FOR AN OPEN	
● Disconnect: Seat Regulator Control Switch C360. ● Measure the resistance between rear height motor C363, Circuit 983 (RD/LG), harness side and seat regulator control switch C360-1, Circuit 983 (RD/LG), harness side; then between rear height motor C363, Circuit 982 (YE/LG), harness side and seat regulator control switch C360-6, Circuit 982 (YE/LG), harness side.  AR2079-A	**Yes** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

• **Is the resistance less than 5 ohms?**	
C3 CHECK CIRCUIT 983 (RD/LG) AND 982 (YE/LG) FOR A SHORT TO GROUND	
• Measure the resistance between rear height motor C363, Circuit 983 (RD/LG), harness side and ground; and between rear height motor C363, Circuit 982 (YE/LG), harness side and ground.  AR2075-A • **Are the resistances greater than 10,000 ohms?**	**Yes** GO to C4 . **No** REPAIR the circuit. TEST the system for normal operation.
C4 CHECK THE UP POSITION INPUT	
• Connect: Seat Regulator Control Switch C360. • Measure the voltage between rear height motor C363, Circuit 983 (RD/LG), harness side and ground.  AR2077-A • Actuate the seat regulator control switch to the rear UP position. • **Is the voltage greater than 10 volts?**	**Yes** GO to C5 . **No** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation.
C5 CHECK THE DOWN POSITION INPUT	
• Measure the voltage between rear height motor C363, Circuit 982 (YE/LG), harness side and ground.  AR2078-A • Actuate the seat regulator control switch to the rear DOWN position. • **Is the voltage greater than 10 volts?**	**Yes** INSTALL a new seat track. REFER to Seat Track . TEST the system for normal operation. **No** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation.

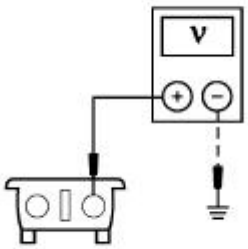
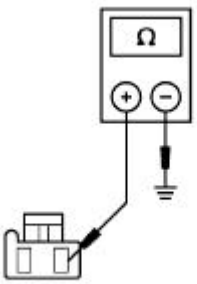
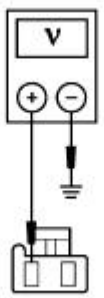
PINPOINT TEST D: THE POWER SEAT DOES NOT MOVE HORIZONTALLY

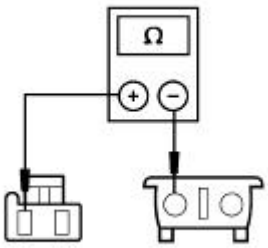
Test Step	Result / Action to Take
D1 CHECK THE MOTOR SUPPLY CIRCUITS • Disconnect: Horizontal Motor C362. • **NOTE:** Make sure all connectors are connected on the seat. • Measure the resistance between horizontal motor C362, Circuit 981 (RD/WH), harness side and ground; and between horizontal motor C362, Circuit 980 (YE/WH), harness side and ground.  AR2075-A • **Are the resistances less than 5 ohms?**	**Yes** GO to D3 . **No** GO to D2 .
D2 CHECK CIRCUIT 981 (RD/WH) AND 980 (YE/WH) FOR AN OPEN • Disconnect: Seat Regulator Control Switch C360. • Measure the resistance between horizontal motor C362, Circuit 981 (RD/WH), harness side and seat regulator control switch C360-3, Circuit 981 (RD/WH), harness side; then between horizontal motor C362, Circuit 980 (YE/WH), harness side and seat regulator control switch C360-8, Circuit 980 (YE/WH), harness side.  AR2080-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
D3 CHECK CIRCUIT 981 (RD/WH) AND 980 (YE/WH) FOR A SHORT TO GROUND • Measure the resistance between horizontal motor C362, Circuit 981 (RD/WH), harness side and ground; and between horizontal motor C362, Circuit 980 (YE/WH), harness side and ground.  AR2075-A • **Are the resistances greater than 10,000 ohms?**	**Yes** GO to D4 . **No** REPAIR the circuit. TEST the system for normal operation.

D4 CHECK THE REARWARD POSITION INPUT	
• Connect: Seat Regulator Control Switch C360. • Measure the voltage between horizontal motor C362, Circuit 981 (RD/WH), harness side and ground.  AR2077-A • Actuate the seat regulator control switch to the REARWARD position. • **Is the voltage greater than 10 volts?**	**Yes** GO to D5 . **No** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation.
D5 CHECK THE FORWARD POSITION INPUT	
• Measure the voltage between horizontal motor C362, Circuit 980 (YE/WH), harness side and ground.  AR2078-A • Actuate the seat regulator control switch to the FORWARD position. • **Is the voltage greater than 10 volts?**	**Yes** INSTALL a new seat track. REFER to Seat Track . TEST the system for normal operation. **No** INSTALL a new seat regulator control switch. REFER to Switch—Seat Regulator Control . TEST the system for normal operation.

PINPOINT TEST E: THE POWER LUMBAR IS INOPERATIVE

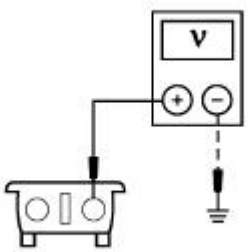
Test Step	Result / Action to Take
E1 CHECK THE LUMBAR COMPRESSOR OPERATION	
• Actuate the lumbar seat control switch to the inflate position. • **Did the lumbar compressor motor run?**	**Yes** GO to E6 . **No** GO to E2 .
E2 CHECK CIRCUIT 566 (DG)	
• Disconnect: Lumbar Seat Control Switch C361. • Measure the voltage between lumbar seat control switch C361, Circuit 566 (DG), harness side and ground.	**Yes** GO to E3 . **No** REPAIR the circuit. TEST the system for normal operation.

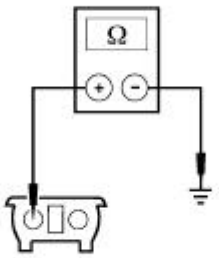
 AR2081-A • **Is the voltage greater than 10 volts?**	
E3 CHECK CIRCUIT 1205 (BK) FOR AN OPEN • Disconnect: Lumbar Motor C366. • Measure the resistance between lumbar motor C366, Circuit 1205 (BK), harness side and ground.  AR1520-A • **Is the resistance less than 5 ohms?**	**Yes** GO to E4 . **No** REPAIR the circuit. TEST the system for normal operation.
E4 CHECK THE POWER SUPPLY TO THE LUMBAR MOTOR • Connect: Lumbar Seat Control Switch C361. • Measure the voltage between lumbar motor C366, Circuit 51 (BK/WH), harness side and ground.  AR1521-A • Actuate the lumbar seat control switch the inflate position. • **Is the voltage greater than 10 volts?**	**Yes** INSTALL a new lumbar motor. REFER to Lumbar Motor . TEST the system for normal operation. **No** GO to E5 .
E5 CHECK CIRCUIT 51 (BK/WH) FOR AN OPEN • Disconnect: Lumbar Seat Control Switch C361. • Measure the resistance between lumbar seat control switch C361, Circuit 51 (BK/WH), harness side and lumbar motor C366, Circuit 51 (BK/WH), harness side.	**Yes** INSTALL a new lumbar seat control switch. REFER to Lumbar Control Switch . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

 AR2084-A ● **Is the resistance less than 5 ohms?**	
E6 CHECK THE LUMBAR ADJUSTING SYSTEM ● Actuate the lumbar seat control switch to the inflate position while observing the seat backrest lumbar adjusting pad. ● **Did the seat backrest lumbar adjusting pad inflate?**	**Yes** GO to E10 . **No** GO to E7 .
E7 CHECK THE SEAT BACKREST LUMBAR ADJUSTING PAD ● Visually inspect the seat backrest lumbar adjusting pad. ● **Is the seat backrest lumbar adjusting pad damaged?**	**Yes** INSTALL a new seat backrest lumbar adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation. **No** GO to E8 .
E8 CHECK AIR FLOW FROM LUMBAR COMPRESSOR ● Disconnect the seat backrest lumbar adjusting hose from the lumbar motor. ● Actuate the lumbar seat control switch to the inflate position while feeling for air at the motor connection. ● **Is air felt at the lumbar motor hose connection?**	**Yes** GO to E9 . **No** INSTALL a new lumbar motor. REFER to Lumbar Motor . TEST the system for normal operation.
E9 CHECK THE AIR FLOW FROM THE LUMBAR SEAT CONTROL SWITCH ● Reconnect the hose to the lumbar motor. ● Disconnect the seat backrest lumbar adjusting hose at the lumbar seat control switch. ● Actuate the lumbar seat control switch to the inflate position. ● **Is air felt at the seat backrest lumbar adjusting hose?**	**Yes** GO to E10 . **No** INSTALL a new seat backrest lumbar adjusting hose. TEST the system for normal operation.
E10 CHECK THE SYSTEM FOR LEAKS ● Reconnect the hose at the lumbar seat control switch. ● Disconnect the seat backrest lumbar adjusting hose at the seat backrest lumbar adjusting pad. ● Install an in-line pressure gauge on the hose. ● Actuate the lumbar seat control switch to the inflate position until the gauge reads 34.47 kPa (5 psi). The system should hold pressure for three hours. ● **After three hours, is the pressure reading 32.41 kPa (4.7**	**Yes** The system is operating correctly. TEST the system for normal operation. **No** GO to E11 .

psi) or more?	
E11 CHECK THE SEAT BACKREST LUMBAR ADJUSTING PAD FOR LEAKS	
• Remove the in-line pressure gauge. • Use a hand pump and inflate the seat backrest lumbar adjusting pad to 34.47 kPa (5 psi). The seat backrest lumbar adjusting pad should hold pressure for three hours. • **After three hours, is the pressure reading 32.41 kPa (4.7 psi) or more?**	**Yes** INSTALL a new lumbar seat control switch. REFER to Lumbar Control Switch . TEST the system for normal operation. **No** INSTALL a new seat backrest lumbar adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation.

PINPOINT TEST F: THE POWER BOLSTER/LUMBAR IS INOPERATIVE — DRIVER

Test Step	Result / Action to Take
F1 CHECK THE BOLSTER/LUMBAR COMPRESSOR OPERATION	
• Actuate the bolster/lumbar seat control switches. • **Does the bolster/lumbar compressor motor run?**	**Yes** GO to F5 . **No** GO to F2 .
F2 CHECK CIRCUIT (BK) FOR VOLTAGE	
• Disconnect: Bolster/lumbar pump and solenoid module. • Measure the voltage at bolster/lumbar pump and solenoid module pin 1 (BK), harness side and ground.  AR2081-A • **Is the voltage greater than 10 volts?**	**Yes** GO to F3 . **No** REPAIR the circuit. TEST the system for normal operation.
F3 CHECK CIRCUIT (LG) FOR AN OPEN	
• Measure the resistance between bolster/lumbar pump and solenoid module pin 2, (LG), harness side and ground.	**Yes** GO to F4 . **No** REPAIR the circuit. TEST the system for normal operation.

 A0054344 ● **Is the resistance less than 5 ohms?**	
F4 CHECK THE BOLSTER/LUMBAR SEAT CONTROL SWITCHES ● Carry out the bolster/lumbar seat control switch component test. Refer to Wiring Diagrams Cell 149 for schematic and connector information. ● **Did the seat control switches pass?**	**Yes** INSTALL a new bolster/lumbar pump and solenoid module. REFER to Lumbar Motor . TEST the system for normal operation. **No** INSTALL a new bolster/lumbar seat control switch. REFER to Lumbar Control Switch . TEST the system for normal operation.
F5 CHECK THE LUMBAR ADJUSTING SYSTEM ● Actuate the bolster/lumbar seat control switches to the inflate position while observing the seat backrest lumbar adjusting pad, backrest bolster and cushion bolster. ● **Did the seat bolsters/lumbar adjusting pads inflate?**	**Yes** GO to F9 . **No** For seat backrest lumbar, GO to F6 . For seat backrest bolster, GO to F10 . For seat cushion bolster, GO to F14 .
F6 CHECK THE SEAT BACKREST LUMBAR ADJUSTING PAD ● Visually inspect the seat backrest lumbar adjusting pad. ● **Is the seat backrest lumbar adjusting pad damaged?**	**Yes** INSTALL a new seat backrest lumbar adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation. **No** GO to F7 .
F7 CHECK AIR FLOW FROM LUMBAR COMPRESSOR ● Disconnect the seat backrest lumbar adjusting hose from the connection at the seat pivot bolt. ● Actuate the lumbar seat control switch to the inflate position while feeling for air at the connection. ● **Is air felt at the lumbar motor hose connection?**	**Yes** GO to F8 . **No** INSTALL a new bolster/lumbar pump and solenoid module. REFER to

	Front Seat Cushion . TEST the system for normal operation.
F8 CHECK THE SYSTEM FOR LEAKS • Reconnect the hose at the seat backrest lumbar pivot bolt. • Disconnect the seat backrest lumbar adjusting hose at the seat backrest lumbar adjusting pad. • Install an in-line pressure gauge on the hose. • Actuate the lumbar seat control switch to the inflate position until the gauge reads 34.47 kPa (5 psi). The system should hold pressure for three hours. • **After three hours, is the pressure reading 32.41 kPa (4.7 psi) or more?**	**Yes** The system is operating correctly. TEST the system for normal operation. **No** GO to F9 .
F9 CHECK THE SEAT BACKREST LUMBAR ADJUSTING PAD FOR LEAKS • Remove the in-line pressure gauge. • Use a hand pump and inflate the seat backrest lumbar adjusting pad to 34.47 kPa (5 psi). The seat backrest lumbar adjusting pad should hold pressure for three hours. • **After three hours, is the pressure reading 32.41 kPa (4.7 psi) or more?**	**Yes** INSTALL a new bolster/lumbar pump and solenoid module. REFER to Lumbar Motor . TEST the system for normal operation. **No** INSTALL a new seat backrest lumbar adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation.
F10 CHECK THE SEAT BACKREST BOLSTER ADJUSTING PADS • Visually inspect the seat backrest bolster adjusting pad. • **Is the seat backrest bolster adjusting pad damaged?**	**Yes** INSTALL a new seat backrest bolster adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation. **No** GO to F11 .
F11 CHECK AIR FLOW FROM BOLSTER COMPRESSOR • Disconnect the seat backrest bolster adjusting hose from the connection at the seat pivot bolt. • Actuate the bolster seat control switch to the inflate position while feeling for air at the connection. • **Is air felt at the lumbar motor hose connection?**	**Yes** GO to F12 . **No** INSTALL a new bolster/lumbar pump and solenoid module. REFER to Lumbar Motor . TEST the system for normal operation.
F12 CHECK THE SYSTEM FOR LEAKS • Reconnect the hose at the seat backrest bolster pivot bolt. • Disconnect the seat backrest bolster adjusting hose at the seat backrest bolster adjusting pad. • Install an in-line pressure gauge on the hose.	**Yes** The system is operating correctly. TEST the system for normal operation.

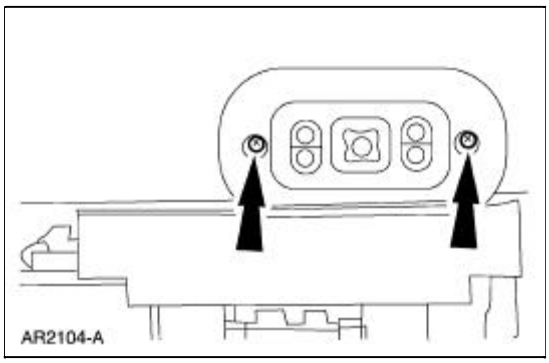
• Actuate the bolster seat control switch to the inflate position until the gauge reads 34.47 kPa (5 psi). The system should hold pressure for three hours. • **After three hours, is the pressure reading 32.41 kPa (4.7 psi) or more?**	**No** GO to F13 .
F13 CHECK THE SEAT BACKREST BOLSTER ADJUSTING PAD FOR LEAKS	
• Remove the in-line pressure gauge. • Use a hand pump and inflate the seat backrest bolster adjusting pad to 34.47 kPa (5 psi). The seat backrest bolster adjusting pad should hold pressure for three hours. • **After three hours, is the pressure reading 32.41 kPa (4.7 psi) or more?**	**Yes** INSTALL a new bolster/lumbar pump and solenoid module. REFER to Lumbar Motor . TEST the system for normal operation. **No** INSTALL a new seat backrest bolster adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation.
F14 CHECK THE SEAT CUSHION BOLSTER ADJUSTING PADS	
• Visually inspect the seat cushion bolster adjusting pad. • **Is the seat cushion bolster adjusting pad damaged?**	**Yes** INSTALL a new seat cushion bolster adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation. **No** GO to F15 .
F15 CHECK AIR FLOW FROM BOLSTER COMPRESSOR	
• Disconnect the seat cushion bolster adjusting hose from the connection at the seat pivot bolt. • Actuate the bolster seat control switch to the inflate position while feeling for air at the connection. • **Is air felt at the bolster motor hose connection?**	**Yes** GO to F16 . **No** INSTALL a new bolster/lumbar pump and solenoid module. REFER to Lumbar Motor . TEST the system for normal operation.
F16 CHECK THE SYSTEM FOR LEAKS	
• Reconnect the hose at the seat cushion bolster pivot bolt. • Disconnect the seat cushion bolster adjusting hose at the seat cushion bolster adjusting pad. • Install an in-line pressure gauge on the hose. • Actuate the bolster seat control switch to the inflate position until the gauge reads 34.47 kPa (5 psi). The system should hold pressure for three hours. • **After three hours, is the pressure reading 32.41 kPa (4.7 psi) or more?**	**Yes** The system is operating correctly. TEST the system for normal operation. **No** GO to F17 .
F17 CHECK THE SEAT CUSHION BOLSTER ADJUSTING PAD FOR LEAKS	
• Remove the in-line pressure gauge.	**Yes**

• Use a hand pump and inflate the seat cushion bolster adjusting pad to 34.47 kPa (5 psi). The seat cushion bolster adjusting pad should hold pressure for three hours. • **After three hours, is the pressure reading 32.41 kPa (4.7 psi) or more?**	INSTALL a new bolster/lumbar pump and solenoid module. REFER to Lumbar Motor . TEST the system for normal operation. **No** INSTALL a new seat cushion bolster adjusting pad. REFER to Lumbar Assembly . TEST the system for normal operation.

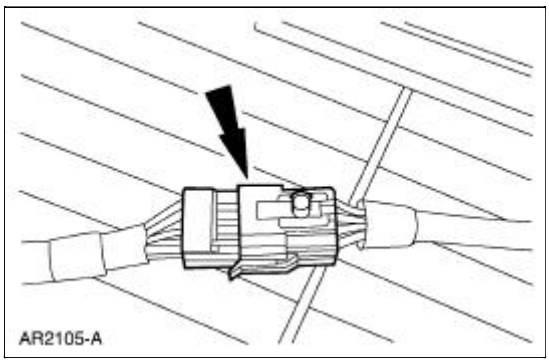
Switch —Seat Regulator Control

Removal and Installation

1. Disconnect the battery. For additional information, refer to Section 414-01 .
2. Remove the screws and position the seat regulator control switch aside.



3. Disconnect the electrical connector and remove the seat regulator control switch.



4. To install, reverse the removal procedure.

Lumbar Control Switch

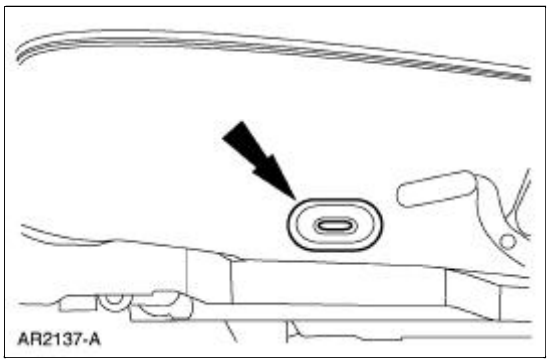
Removal and Installation

All vehicles

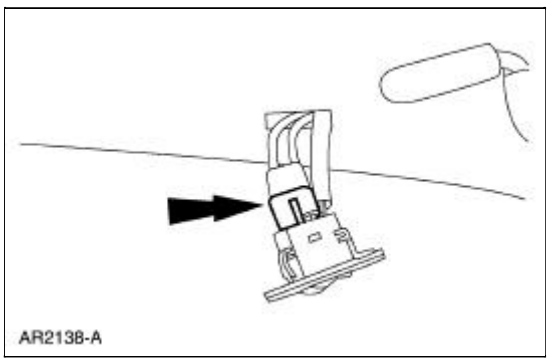
1. Remove the front seat. For additional information, refer to Seat—Front Power in this section.

Vehicles with standard power lumbar

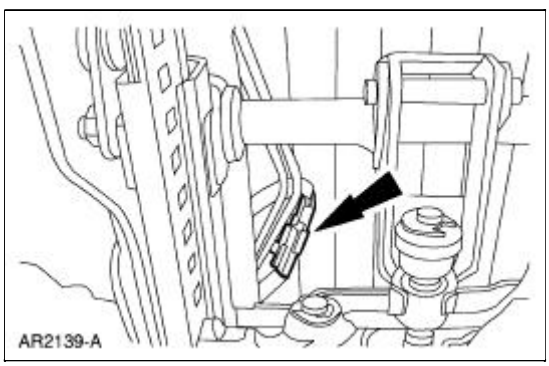
2. Pull to remove the lumbar control switch (14C715).



3. Disconnect the power lumbar support air hoses.



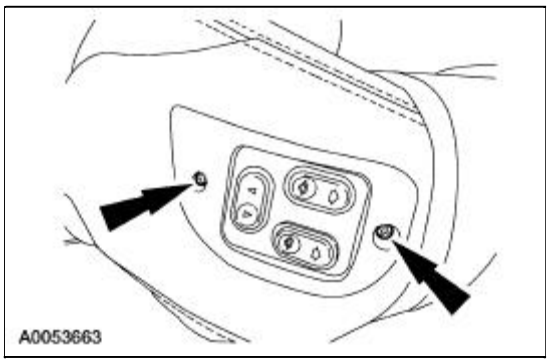
4. Disconnect the lumbar seat control switch electrical connector.



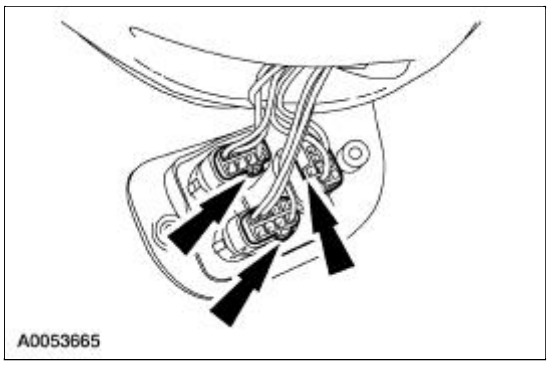
5. Remove the lumbar seat control switch.

Vehicles with power bolster and lumbar

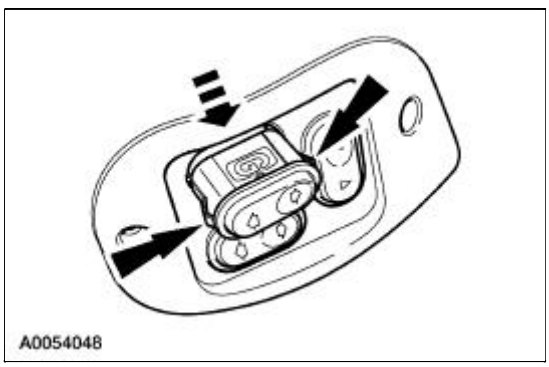
6. Remove the two screws for the power bolster and lumbar switch bezel.



7. Disconnect the power lumbar switch and the bolster switches.



8. Pinch the release tabs on the affected switch and push the switch through the bezel.



All vehicles

9. To install, reverse the removal procedure.

Front Seat Backrest

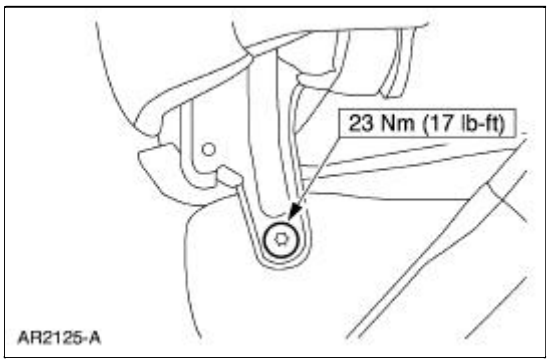
Removal and Installation

All vehicles

1. Remove the seat. For additional information, refer to Seat—Front Power in this section.

2. Remove the front seat backrest latch. For additional information, refer to Latch—Front Seat Backrest in this section.

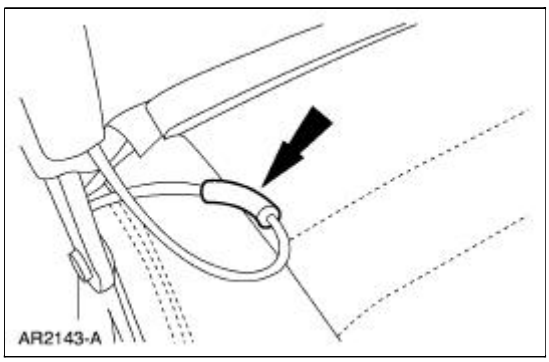
3. Remove the pivot bolt and seat backrest.



Vehicles with standard power lumbar

4. **NOTE:** When installing the seat backrest pivot bolt, make sure the hose is in front of the pivot bolt.

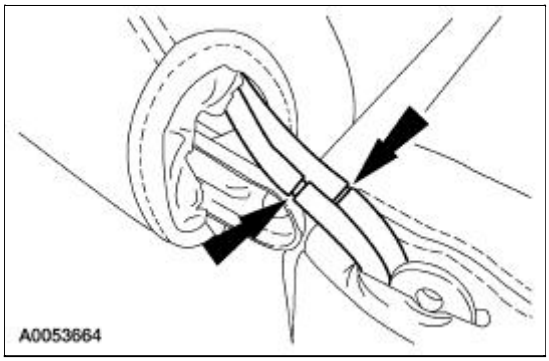
   Disconnect the power lumbar air supply hose.



Vehicles with power bolster and lumbar

5. **NOTE:** When installing the seat backrest pivot bolt, make sure the hoses are in front of the pivot bolt.

   Disconnect the power lumbar and bolster hoses.



All vehicles

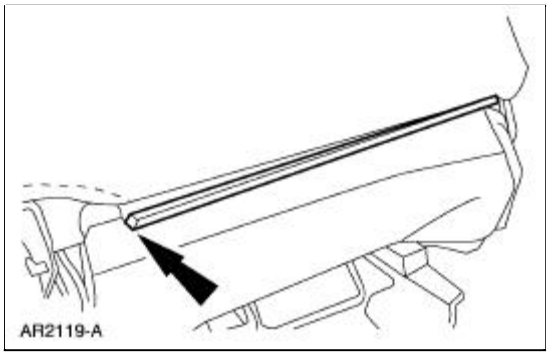
6. To install, reverse the removal procedure.

Lumbar Assembly

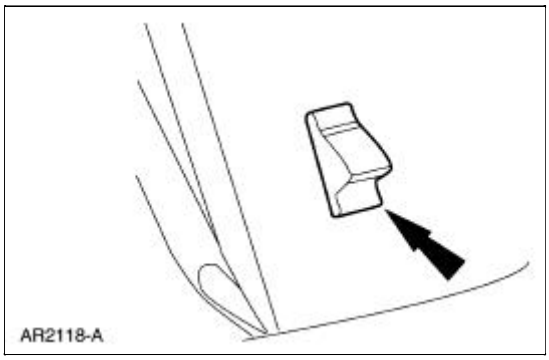
Removal and Installation

All vehicles

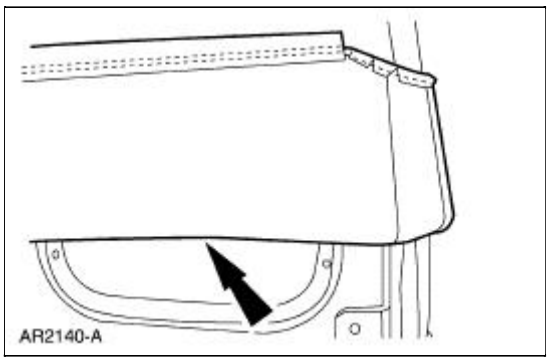
1. Remove the front seat. For additional information, refer to Seat—Front Power in this section.
2. Release the J-clip.



3. Remove the seat backrest latch handle knob (62762).



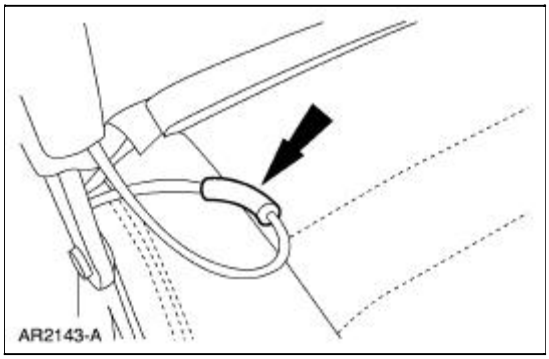
4. Pull the seat backrest trim cover up to the top of the seat.



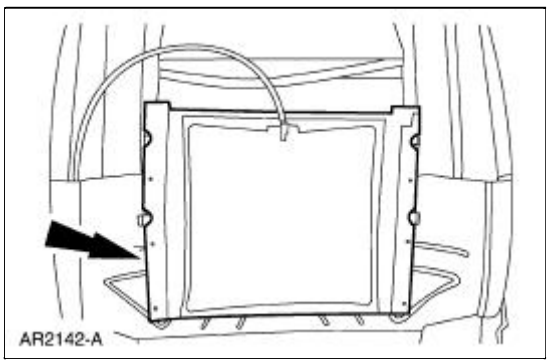
5. Remove the seat backrest foam pad from the seat backrest frame.

Vehicles with standard power lumbar

6. Disconnect the power lumbar support air hose.

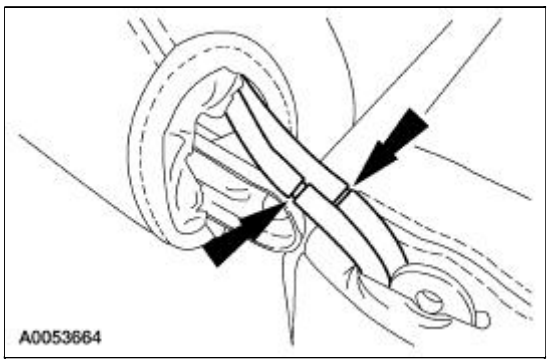


7. Remove the seat backrest adjuster (65500).

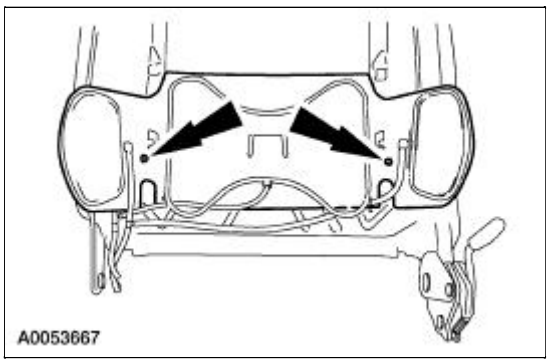


Vehicles with power bolster and lumbar

8. Disconnect the lumbar and bolster air supply hoses.



9. Remove the two screws and remove the lumbar and bolster adjuster pad.



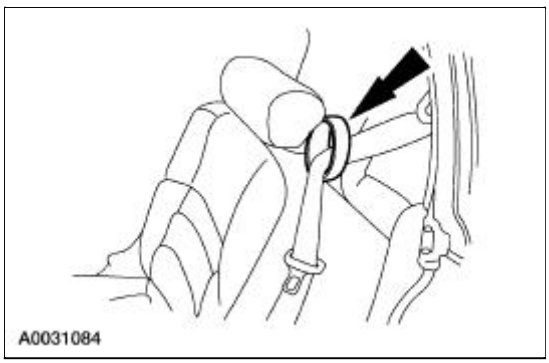
All vehicles

10. To install, reverse the removal procedure.

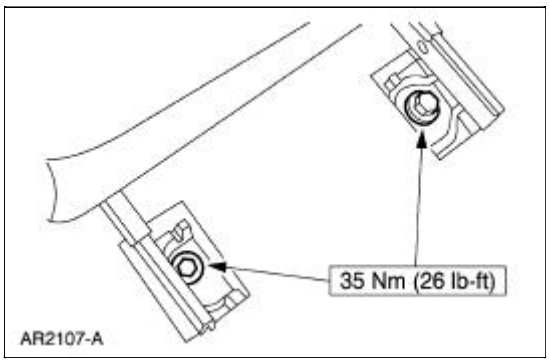
Seat —Front Power

Removal and Installation

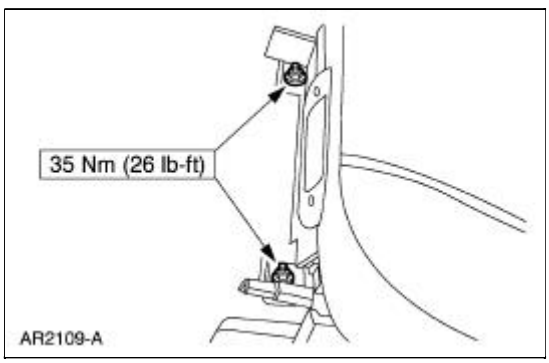
1. Remove the safety belt through the opening in the safety belt guide.



2. Move the seat forward.
3. Remove the bolt covers and remove the seat track bolts.

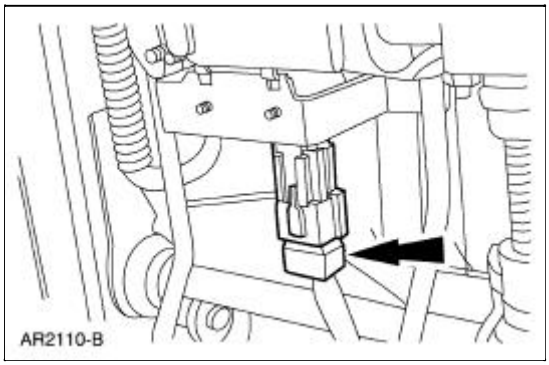


4. Move the seat rearward.
5. Remove the seat track nuts.



6. Move the seat forward.
7. Disconnect the battery. For additional information, refer to Section 414-01 .

8. Disconnect the power seat electrical connector.

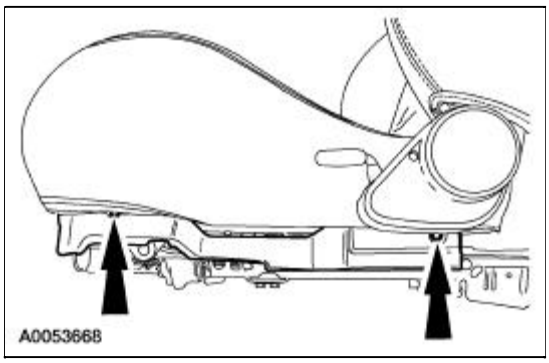


9. Remove the power seat.
10. To install, reverse the removal procedure.

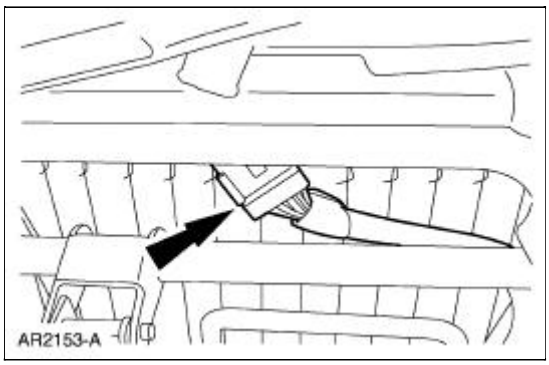
Seat Track

Removal and Installation

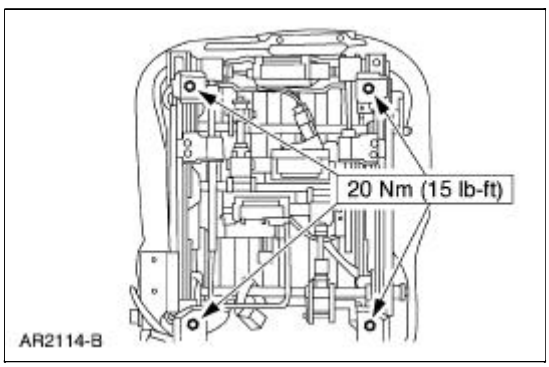
1. Remove the front seat. For additional information, refer to Seat—Front Power in this section.
2. Remove the outboard seat trim shield.



3. Disconnect the electrical connector.



4. Remove the seat track bolts.



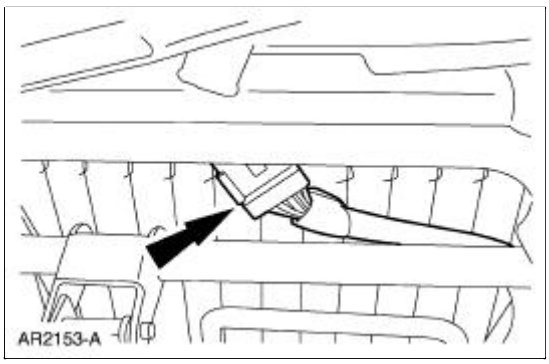
5. To install, reverse the removal procedure.

Lumbar Motor

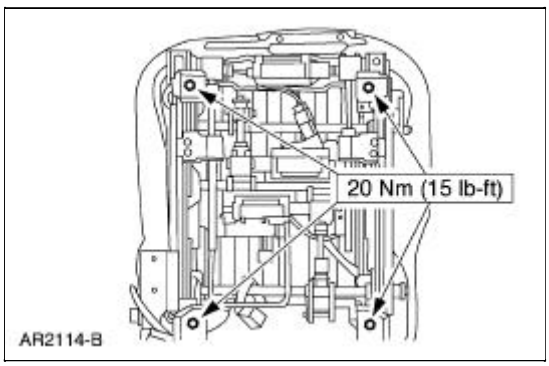
Removal and Installation

All vehicles

1. Remove the front seat. For additional information, refer to Seat—Front Power in this section.
2. Disconnect the power seat track electrical connector.

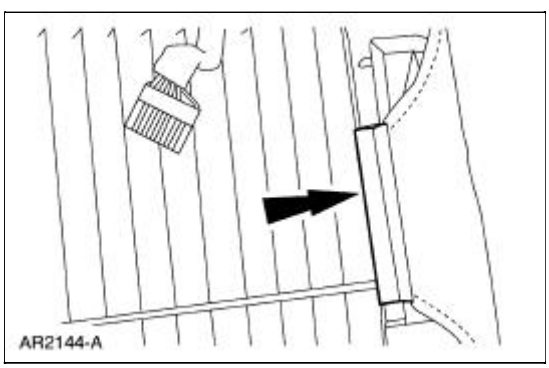


3. Remove the four seat track bolts.

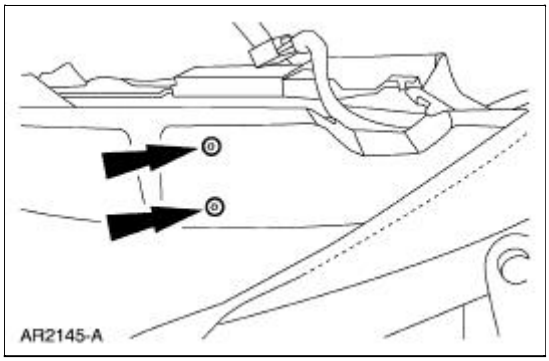


Vehicles with standard power lumbar

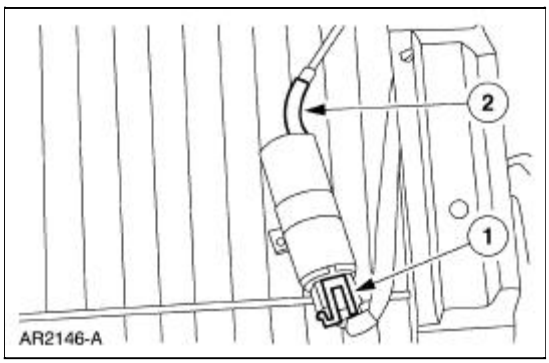
4. Release the J-clip.



5. Remove the front seat backrest pad adjusting pump screws.



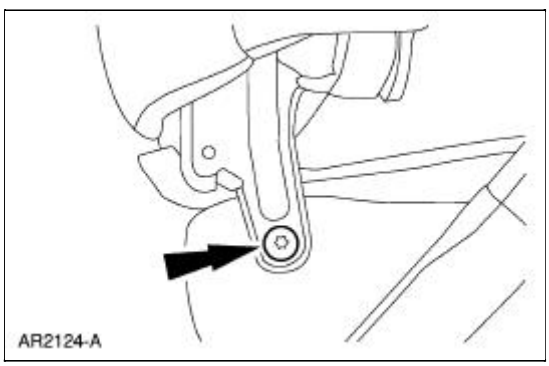
6. Remove the front seat backrest pad adjusting pump (65530).
    1. Disconnect the electrical connector.
    2. Disconnect the power lumbar support air hose.



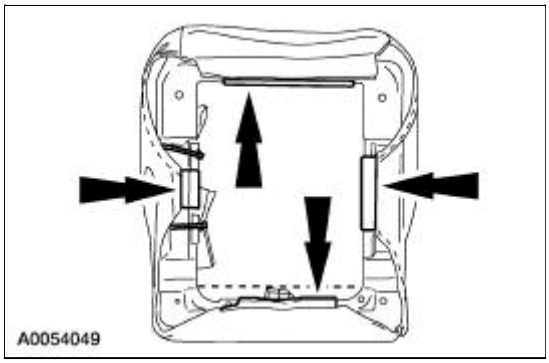
Vehicles with power bolster and lumbar

7. Remove the driver seat backrest latch. For additional information, refer to Latch—Front Seat Backrest in this section.

8. Remove the pivot bolt and seat backrest.
    - Disconnect the power lumbar support air hoses.



9. Release the J-clips.



10. **NOTE:** When removing the cushion from the frame, it is not necessary to remove the trim cover from the cushion foam pad.

    Remove the cushion foam pad from the frame.

11. **NOTE:** The lumbar and bolster pump and solenoid module is serviced as part of the cushion frame assembly.

    Install a new seat cushion frame assembly.

All vehicles

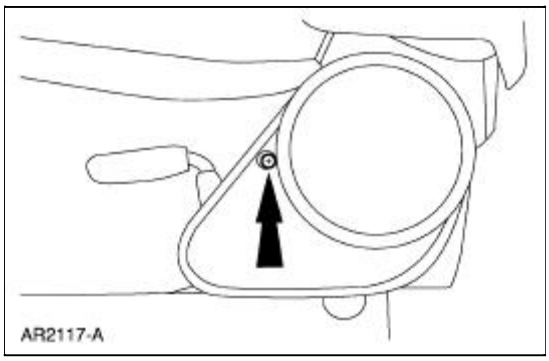
12. To install, reverse the removal procedure.

Latch —Front Seat Backrest

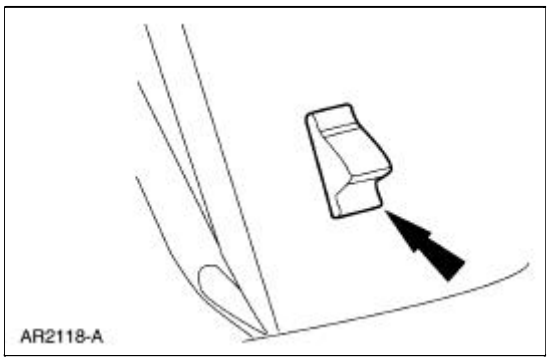
Removal

NOTE: The power seat backrest adjuster assembly must be installed as a new unit. Repair of the power seat backrest adjuster assembly components is not acceptable and should not be attempted.

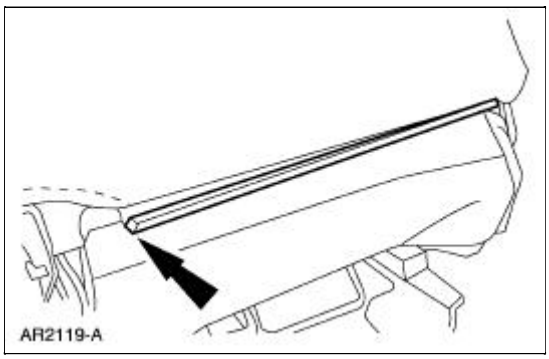
1. Remove the two screws and the seat backrest latch cover.



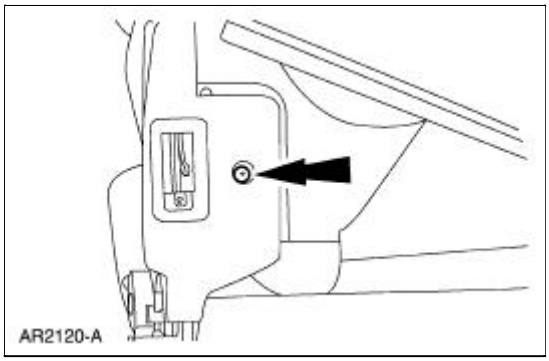
2. Remove the seat backrest latch handle knob (62762).



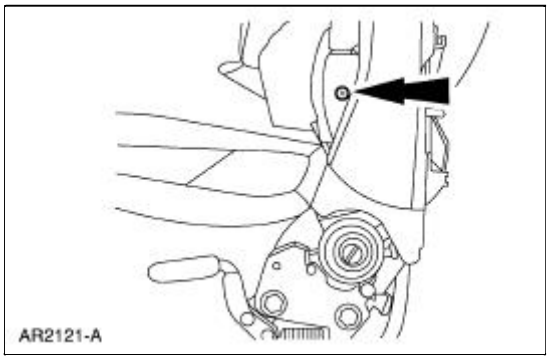
3. Release the J-retainer.



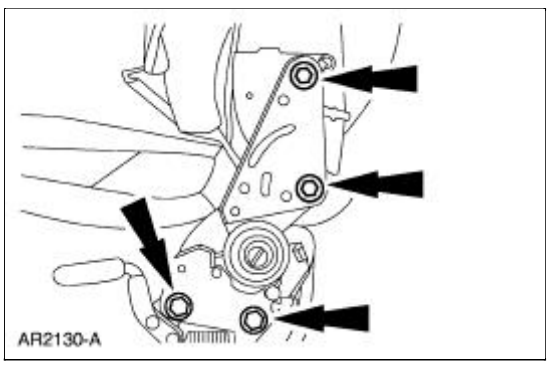
4. Remove the screw.



5. Remove the front seat backrest latch upper cover (62766).

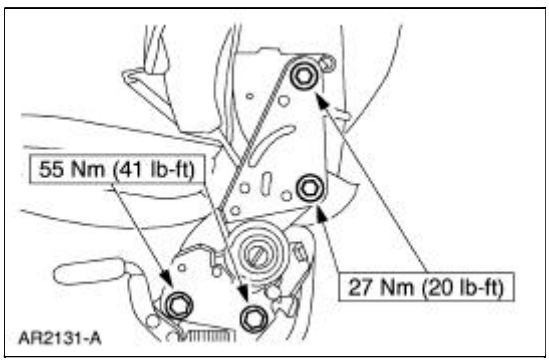


6. Remove the bolts and the seat backrest latch.



Installation

1. To install, reverse the removal procedure.



Front Seat Cushion

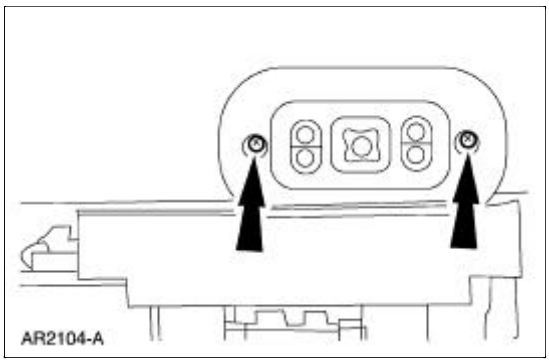
Disassembly and Assembly

All vehicles

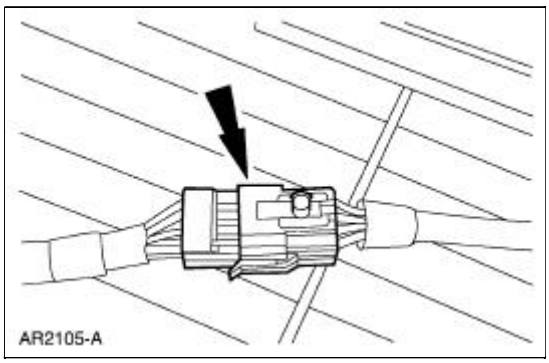
1. Remove the seat track. For additional information, refer to Seat Track in this section.
2. Remove the seat backrest. For additional information, refer to Front Seat Backrest in this section.

Vehicles with power seat

3. Remove the screws in the power seat control switch.

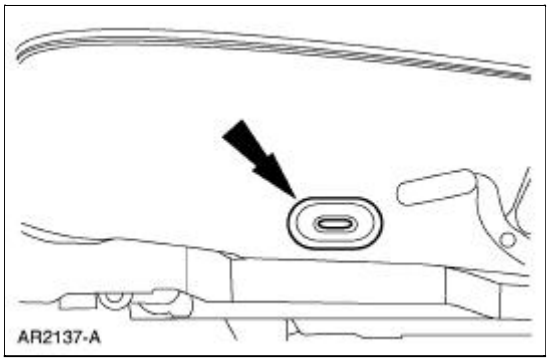


4. Disconnect the electrical connector and remove the power seat control switch.

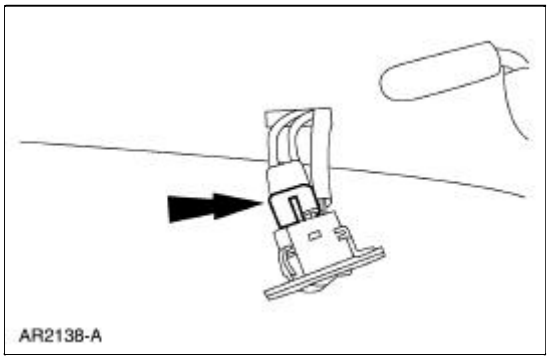


Vehicles with standard power lumbar

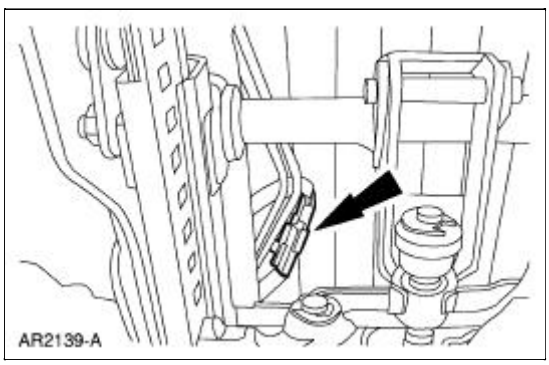
5. Remove the lumbar control switch (14C715).



6. Disconnect the power lumbar support air hoses.



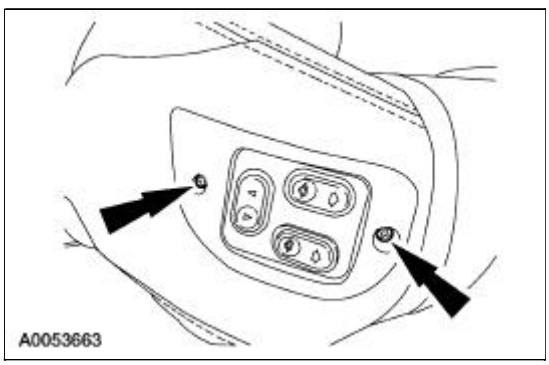
7. Disconnect the lumbar seat control switch electrical connector and remove the lumbar control switch.



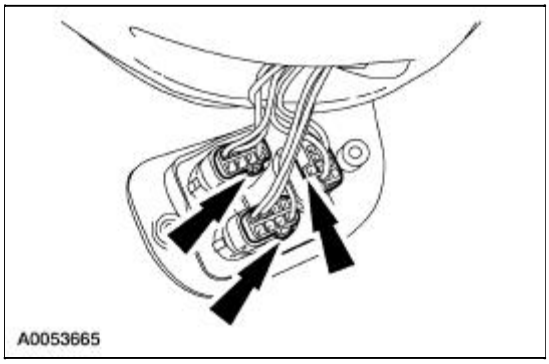
Vehicles with power bolster and lumbar

NOTE: For vehicles with lumbar and bolster, the pump and solenoid module are serviced as part of the seat cushion frame.

8. Remove the power lumbar and bolster seat switch screws.

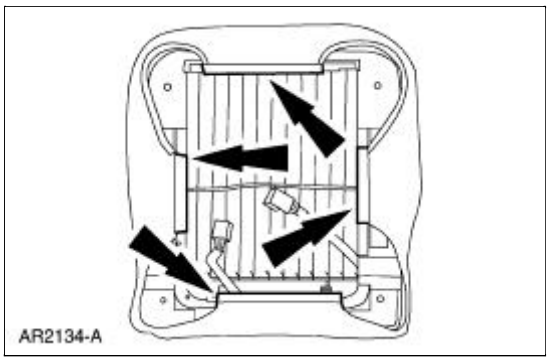


9. Disconnect the lumbar and bolster control switches.

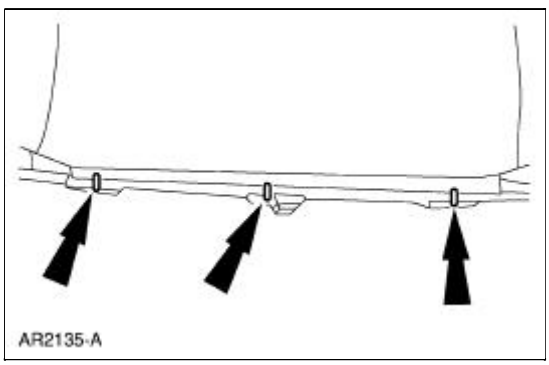


All vehicles

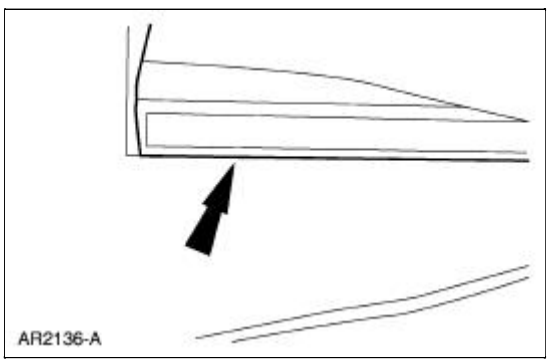
10. Remove the J-clips.



11. Remove the hog rings.



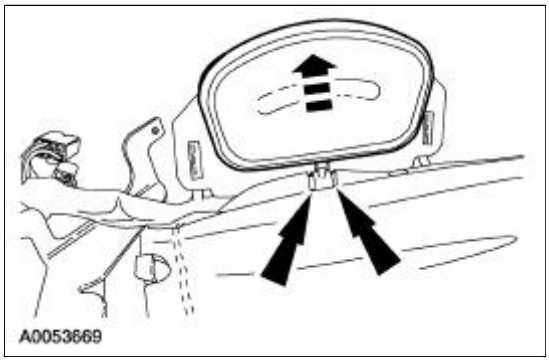
12. Remove the front seat cushion cover (62900) from the front seat cushion pad (632A22).



13. Remove the front seat cushion frame and spring (63100).

Vehicles with power cushion bolster

14. Disconnect the hoses from the two bolster adjuster pads (one shown) and slide the bolster adjuster pad up and off the seat cushion frame.



All vehicles

15. To assemble, reverse the disassembly procedure.

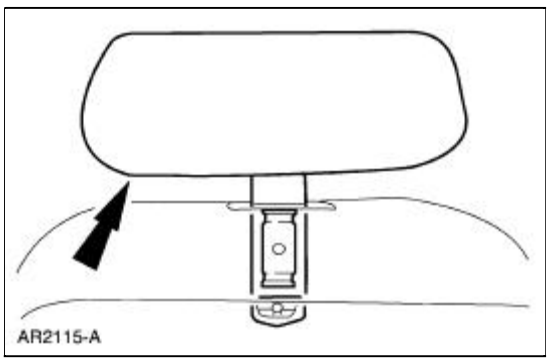
Front Seat Backrest

Disassembly and Assembly

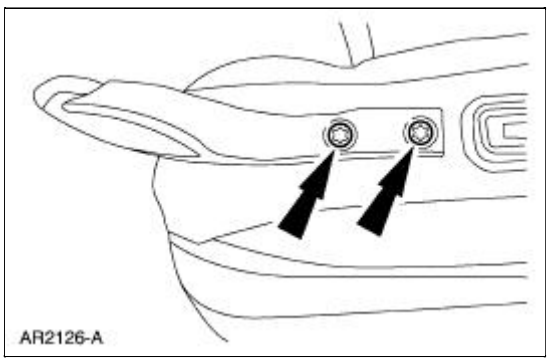
All vehicles

1. Remove the front seat backrest. For additional information, refer to Front Seat Backrest in this section.

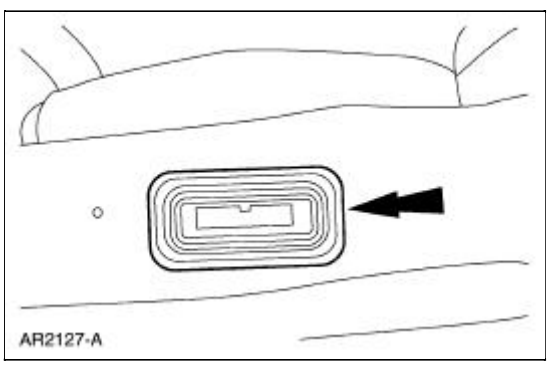
2. Remove the front seat backrest head restraint (611A08).



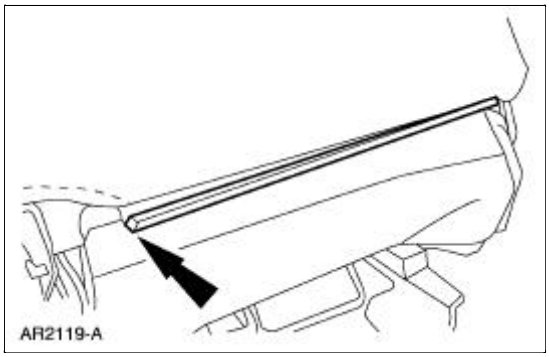
3. Remove the screws and the safety belt guide.



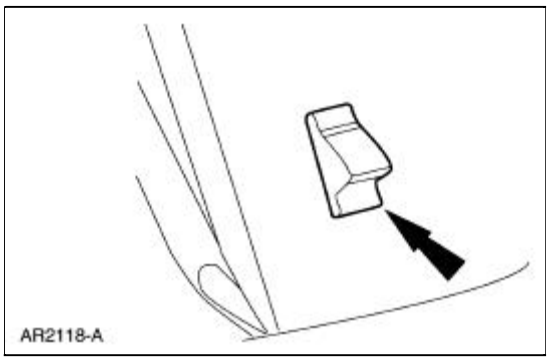
4. Remove the front seat headrest guide rod sleeve (610A16).



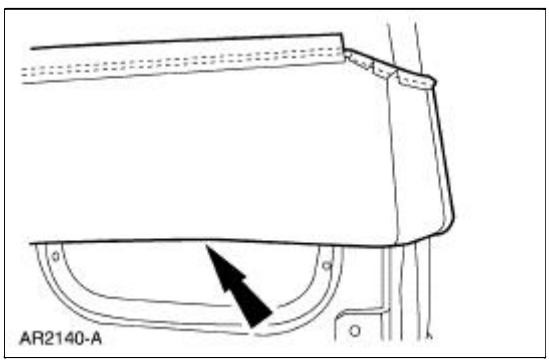
5. Release the J-clip.



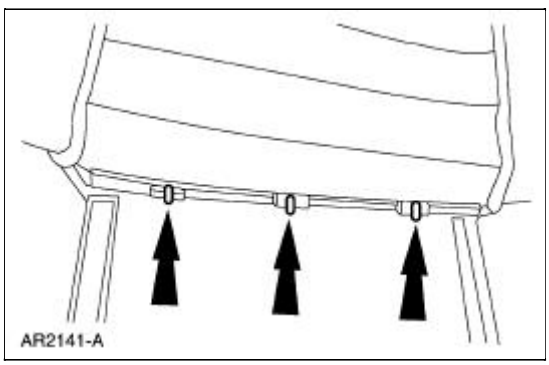
6. Remove the seat backrest latch handle knob.



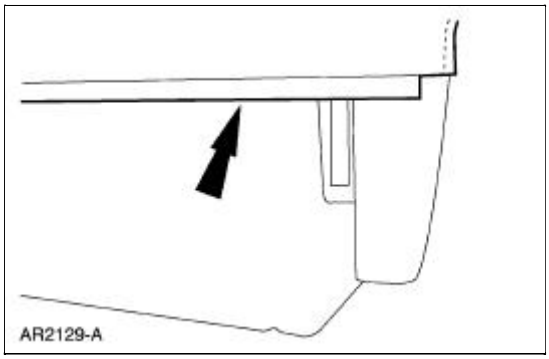
7. Pull the seat backrest trim cover upward.



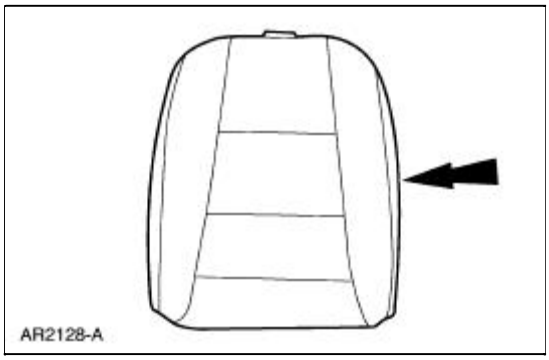
8. Remove the hog rings.



9. Remove the front seat backrest trim cover (64416) from the front seat backrest pad.

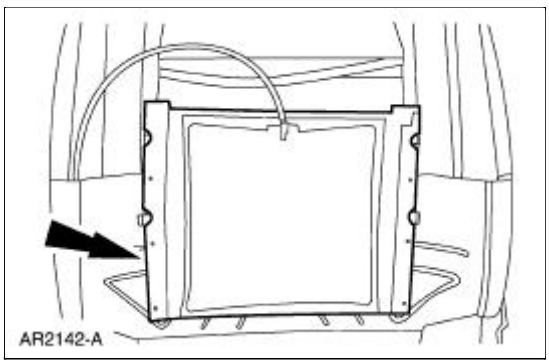


10. Release the front seat backrest frame (61018) from the front seat backrest foam pad.



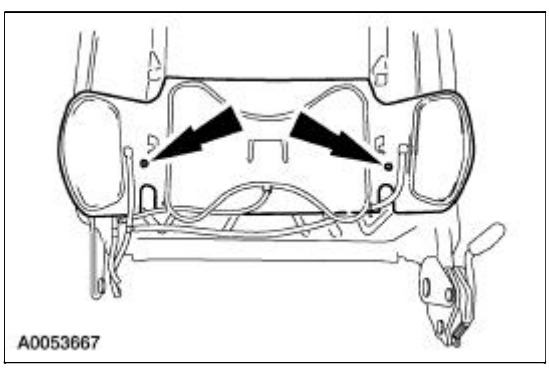
Vehicles with standard power lumbar

11. Remove the seat backrest lumbar adjuster pad.



Vehicles with power bolster and lumbar

12. Remove the two screws and the seat backrest lumbar and bolster adjuster pad.



All vehicles

13. To assemble, reverse the disassembly procedure.

WINDOW REGULATOR ELECTRIC DRIVE CURRENT DRAW

Description	Specification
No Load	5 amperes or less at 12.8 volts

General Specifications

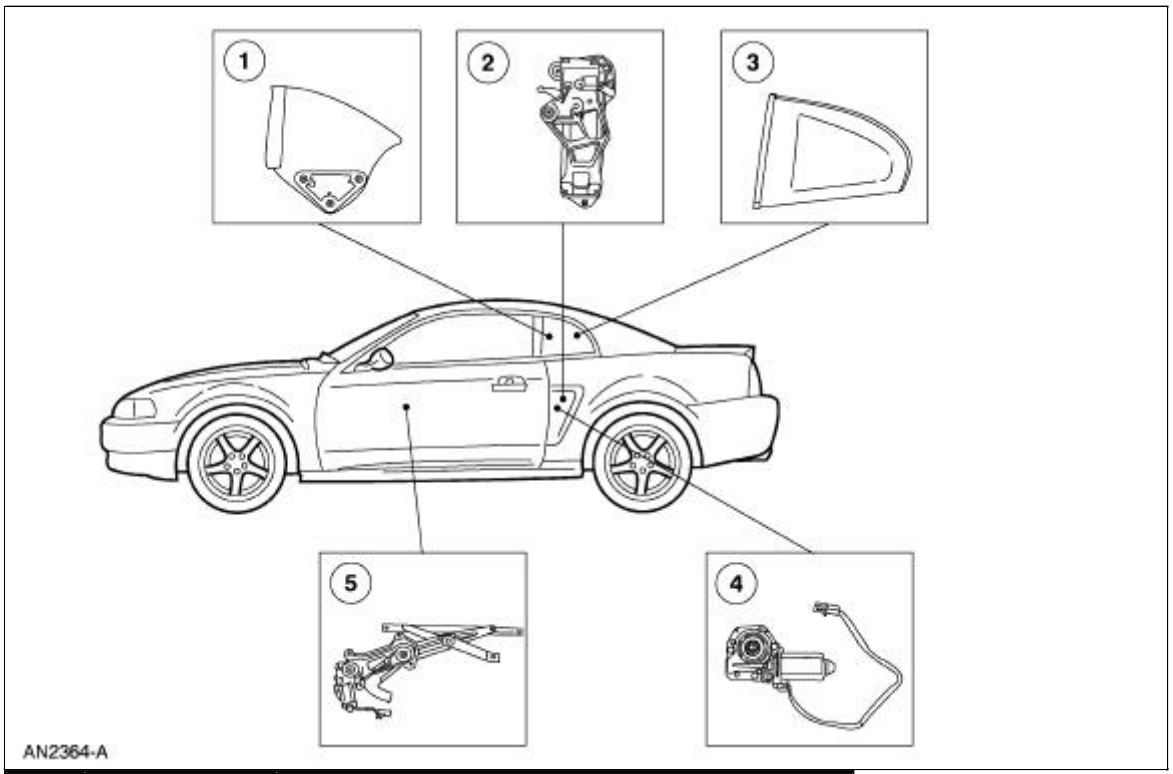
Item	Specification
Silicone Lubricant F7AZ-19G208-BA	ESR-M13P4-A
Multi-Purpose Grease Spray F5AZ-19G209-BA	ESR-M1C159-A
Multi-Purpose Grease DOAZ-19584-AA	ESB-M1C93-B
Rear Window Defroster Repair D8AZ-19562-AA or equivalent	WSB-M4J58-B
Urethane Glass Prep Essex U-401	WSB-M2G314-B
Dark Walnut Metallic Acrylic Lacquer Touch Up Paint ALBZ-19500-5858A or equivalent	ESR-M2-P100-C
Urethane Metal Primer Essex U-413	WSB-M2G234-C
Urethane Adhesive Essex U-216	WSB-M2G316-B
Urethane Adhesive Essex 400 HV	WSB-M2G316-B
Urethane Glass Primer Essex U-402	WSB-M5B280-C

Torque Specifications

Description	Nm	lb-ft	lb-in
Exterior weatherstrip screw	2	—	18
Window run screws	13	10	—
Window regulator motor screws	10	—	89
Upper regulator mounting nuts	13	10	—
Rear door window regulator motor screws	6	—	53
Quarter window regulator nuts	9	—	80
Door window stop bracket screws	12	9	—
Door window glass inner stabilizer bolts	12	9	—
Quarter window glass nuts	3	—	27
Convertible quarter glass retaining bolts/nut	9	—	80
Window regulator equalizer arm nuts	9	—	80
Window regulator nuts	9	—	80
Quarter window regulator nuts	9	—	80

Glass, Frames and Mechanisms

Component Location



Item	Part Number	Description
1	7629710	Convertible quarter window glass
2	7630306	Convertible quarter glass window regulator
3	6329710	Coupe quarter window glass
4	7623394	Convertible quarter window regulator motor
5	6323200	Window regulator with motor

Windshield Glass

The windshield exterior mouldings are installed with the windshield glass. The windshield exterior mouldings cannot be replaced without removal of the windshield.

Window Regulator Control Switch

Power windows are standard on all models. On coupe models, only the front door window glass can be raised or lowered. The quarter window glass is fixed. On the convertible models, all four windows can be raised or lowered. On all models, the window regulator control switches are available only to the front seat passengers. There are no window regulator controls for the back seat passengers. Quarter window glass operations are controlled by the driver window regulator control switch.

Window, One-Touch Down

The LH window one-touch down feature is activated by momentarily pressing the driver window

regulator control switch to the down position. This allows the front door window glass to move downward until it is fully lowered. Momentarily pressing the window regulator control switch while the window glass is moving downward will stop the front door window glass.

Window Glass, Door

The bottom of the door window glass is mounted on a slider bracket which is part of the front door window regulator. Door window glass bracket spacers provide attachment points for the door window glass and prevent direct contact between the slider bracket and the door window glass.

Window Glass, Quarter

The rear quarter window glasses on convertible models are driven by a window regulator motor and guide assembly.

Window Glass, Rear

On the coupe, the rear window upper garnish mouldings are installed with the rear window glass. The rear window upper garnish mouldings cannot be replaced without removing the rear window glass.

Glass, Frames and Mechanisms

Refer to Wiring Diagrams Cell 100 , Power Windows for schematic and connector information.

Refer to Wiring Diagrams Cell 56 , Rear Window Defrost for schematic and connector information.

Special Tool(s)

 ST2332-A	Worldwide Diagnostic System (WDS) 418-F224, New Generation STAR (NGS) Tester 418-F052, or equivalent diagnostic tool
 ST1137-A	73III Automotive Meter 105-R0057 or equivalent

Principles of Operation

Power Window Control

NOTE: Battery power and ground must be removed before disconnecting the GEM connectors to avoid setting false DTCs.

The driver power window one-touch down operation is controlled by the generic electronic module (GEM). This feature functions only when the ignition switch is in the RUN or ACCY positions. The GEM determines ignition switch position by monitoring the key-in ignition, RUN/ACCY and RUN/START circuits. The one-touch down operation is requested of the GEM by momentarily pressing the driver window regulator control switch DOWN for 62 ms to 320 ms. The GEM uses the initial voltage input from the down switch to begin the one-touch down operation. If the voltage input was less than 320 ms, the GEM will maintain the voltage supply to the motor down circuit. The GEM will maintain the operation until:

- seven seconds expires.
- motor stall is detected by monitoring the current draw.
- a voltage input is received by the GEM on either the up or down switch circuits.

The ground for one-touch down operation does not pass through the GEM. The ground is supplied through the driver window regulator control switch as with normal operation. If the GEM continues to see voltage on the down circuit for more than 320 ms after initial activation the GEM will not effect operation. The down circuit through the GEM is a direct connection to the motor in its normal state. This allows the driver window regulator control switch to control the motor for normal operation.

The passenger window motors are hardwired directly to the window regulator control switches.

Inspection and Verification

1. Verify the customer concern by operating the system.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
● Power window regulator ● Window run weatherstrip ● Door window glass	● Central junction box (CJB) circuit breaker 43 (20A), fuse 39 (5A) or 23 (15A) ● Battery junction box (BJB) fuse HTD BL (40A) ● Generic electronic module (GEM) ● Window regulator control switch ● Window regulator motor ● Instrument cluster module (ICM) ● Heated rear window relay ● Rear window defrost switch ● Heated rear window grid ● Circuitry

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the diagnostic tool does not communicate with the vehicle, refer to the diagnostic tool manual.
5. Carry out the DATA LINK DIAGNOSTIC TEST. If the diagnostic tool responds with:
   - CKT 914, CKT 915 or CKT70 - ALL ECUS NO RESP/NOT EQUIP, refer to Section 418-00 .
   - NO RESP/NOT EQUIP for the generic electronic module (GEM), go to Pinpoint Test A.
   - NO RESP/NOT EQUIP for the instrument cluster module (ICM), refer to Section 413-01 .
   - System passed, retrieve and record the continuous diagnostic trouble codes (DTCs), erase the continuous DTCs and carry out self-test diagnostics for the GEM or ICM.
6. If the GEM or ICM DTCs retrieved are related to the concern, go to the GEM or ICM Diagnostic Trouble Code (DTC) Index.
7. If no DTCs related to the concern are retrieved, proceed to the Symptom Chart to continue diagnostics.

GEM DIAGNOSTIC TROUBLE CODE (DTC) INDEX

DTC	Description	Source	Action
B1217	Horn Relay Output Driver Circuit Failure	GEM	GO to Section 501-14B .
B1218	Horn Relay Output Driver Short to Battery	GEM	GO to Section 501-14B .
B1312	Lamp Headlamp Input Circuit	GEM	GO to Section 413-09 .

	Short to Battery		
B1317	Battery Voltage High	GEM	GO to Section 414-00 .
B1318	Battery Voltage Low	GEM	GO to Section 414-00 .
B1322	Door Ajar Driver Circuit Short to Ground	GEM	GO to Section 417-02 .
B1330	Door Ajar Passenger Circuit Short to Ground	GEM	GO to Section 417-02 .
B1334	Decklid Ajar Rear Door Circuit Short to Ground	GEM	GO to Section 417-02 .
B1339	Chime Input Request Circuit Short to Battery	GEM	GO to Section 413-09 .
B1340	Chime Input Request Circuit Short to Ground	GEM	GO to Section 413-09 .
B1342	ECU is Defective	GEM	CLEAR the DTC. RETRIEVE the DTCs. If DTC B1342 is retrieved, INSTALL a new GEM. REFER to Section 419-10 .
B1353	Ignition Key-in Circuit Open	GEM	GO to Section 413-09 .
B1359	Ignition RUN/ACC Circuit Failure	GEM	GO to Section 211-05 .
B1396	Power Door Lock Circuit Short to Battery	GEM	GO to Section 501-14B .
B1397	Power Door Unlock Circuit Short to Battery	GEM	GO to Section 501-14B .
B1405	Power Window Driver Down Circuit Short to Battery	GEM	GO to Pinpoint Test D for convertible or Pinpoint Test E for coupe.
B1408	Power Window Driver Up Circuit Short to Battery	GEM	GO to Pinpoint Test D for convertible or Pinpoint Test E for coupe.
B1410	Power Window Driver Motor Circuit Failure	GEM	GO to Pinpoint Test D for convertible or Pinpoint Test E for coupe.
B1426	Lamp Safety Belt Circuit Short to Battery	GEM	REFER to Section 413-01 .
B1428	Lamp Safety Belt Circuit Failure	GEM	REFER to Section 413-01 .
B1431	Wiper Brake/run Relay Circuit Failure	GEM	GO to Section 501-16 .
B1432	Wiper Brake/run Relay Circuit Short to Battery	GEM	GO to Section 501-16 .
B1434	Wiper High/low Speed Relay Coil Circuit Failure	GEM	GO to Section 501-16 .
B1436	Wiper High/low Speed Relay Coil Circuit Short to Battery	GEM	GO to Section 501-16 .
B1438	Wiper Mode Select Switch Circuit Failure	GEM	GO to Section 501-16 .
B1441	Wiper Mode Select Switch Circuit Short to Ground	GEM	GO to Section 501-16 .
B1446	Wiper Park Sense Circuit Failure	GEM	GO to Section 501-16 .
B1448	Wiper Park Sense Circuit Short to Battery	GEM	GO to Section 501-16 .

B1450	Wiper Wash/delay Switch Circuit Failure	GEM	GO to Section 501-16 .
B1453	Wiper Wash/delay Switch Circuit Short to Ground	GEM	GO to Section 501-16 .
B1458	Wiper Washer Pump Motor Relay Circuit Failure	GEM	GO to Section 501-16 .
B1460	Wiper Washer Pump Motor Relay Circuit Short to Battery	GEM	GO to Section 501-16 .
B1462	Safety Belt Switch Circuit Failure	GEM	GO to Section 413-09 .
B1466	Wiper High/low Speed Not Switching	GEM	GO to Section 501-16 .
B1473	Wiper Low Speed Circuit Motor Failure	GEM	GO to Section 501-16 .
B1476	Wiper High Speed Circuit Motor Failure	GEM	GO to Section 501-16 .
B1498	Decklid Punch-out Sensor Ground Short	GEM	GO to Section 419-01 .
B1551	Decklid Release Circuit Failure	GEM	GO to Section 501-14B .
B1553	Decklid Release Circuit Short to Battery	GEM	GO to Section 501-14B .
B1555	Ignition RUN/START Circuit Failure	GEM	GO to Section 211-05 .
B1603	Lamp Anti-Theft Indicator Circuit Failure	GEM	GO to Section 419-01 .
B1605	Lamp Anti-Theft Indicator Circuit Short to Battery	GEM	GO to Section 419-01 .
B1687	Lamp Dome Input Circuit Short to Battery	GEM	GO to Section 417-02 .
B1833	Door Unlock Disarm Switch Circuit Short to Ground	GEM	GO to Section 419-01 .
B2486	Parklamp Output Relay Driver Circuit Failure	GEM	GO to Section 419-01 .
B2488	Parklamp Output Relay Driver Circuit Short to Battery	GEM	GO to Section 419-01 .
C1189	Brake Fluid Level Sensor Input Circuit Short to Ground	GEM	REFER to Section 413-01 .
C1223	Lamp Brake Warning Output Circuit Failure	GEM	REFER to Section 413-01 .
C1225	Lamp Brake Warning Output Circuit Short to Battery	GEM	REFER to Section 413-01 .

ICM DIAGNOSTIC TROUBLE CODE (DTC) INDEX

DTC	Description	Source	Action
B1343	Heated Backlight Input Circuit Failure	ICM	GO to Pinpoint Test H .

Symptom Chart

Refer to the Wiring Diagrams for the connector numbers stated in pinpoint tests.

Symptom Chart

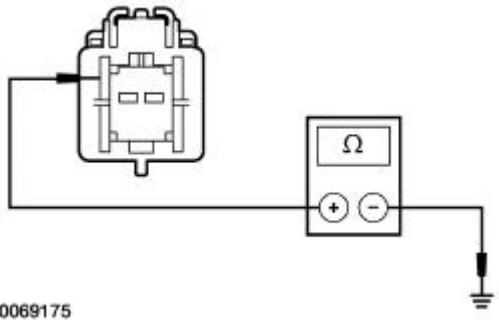
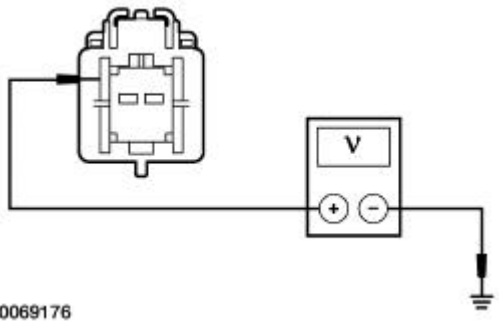
Condition	Possible Sources	Action
● No communication with the generic electronic module (GEM)	● Central junction box (CJB) fuse 39 (5A). ● GEM. ● Circuitry.	● GO to Pinpoint Test A .
● All power windows are inoperative — convertible	● Circuitry. ● CJB circuit breaker 43 (20A). ● Window regulator control switch.	● GO to Pinpoint Test B .
● All power windows are inoperative — coupe	● Circuitry. ● CJB circuit breaker 43 (20A). ● Window regulator control switch.	● GO to Pinpoint Test C .
● A single power window is inoperative — driver, convertible	● Circuitry. ● CJB fuse 43 (20A). ● Ignition switch. ● Window regulator motor. ● Window regulator control switch. ● GEM.	● GO to Pinpoint Test D .
● A single power window is inoperative — driver, coupe	● Circuitry. ● CJB fuse 43 (20A). ● Ignition switch. ● Window regulator motor. ● Window regulator control switch. ● GEM.	● GO to Pinpoint Test E .
● The one-touch down feature is inoperative	● Circuitry. ● CJB fuse 43 (20A). ● Ignition switch. ● Window regulator motor. ● Window regulator control switch. ● GEM.	● For convertible, GO to Pinpoint Test D . ● For coupe, GO to Pinpoint Test E .
● A single power window is inoperative — passenger	● Circuitry. ● Driver window regulator control switch. ● Window regulator motor. ● Passenger window regulator control switch.	● GO to Pinpoint Test F .
● A single power window is	● Circuitry.	● GO to Pinpoint

inoperative — rear, convertible only	• Window regulator motor. • Driver window regulator control switch.	Test G .
• The defrost system is inoperative	• BJB fuse HTD BL (30A). • CJB fuse 23 (15A). • Circuitry. • Instrument cluster module (ICM). • Rear window defrost switch. • Heated rear window grid.	• GO to Pinpoint Test H .
• The defrost system will not shut off automatically	• Circuit. • ICM. • Rear window defrost switch.	• GO to Pinpoint Test I .

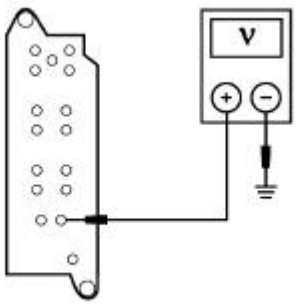
Pinpoint Tests

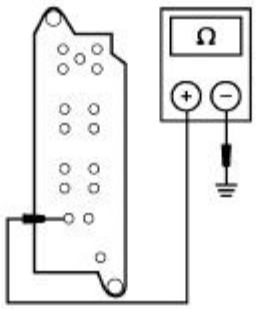
PINPOINT TEST A: NO COMMUNICATION WITH THE GENERIC ELECTRONIC MODULE (GEM)

Test Step	Result / Action to Take
CAUTION: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.	
A1 CHECK THE GENERIC ELECTRONIC MODULE (GEM) POWER SUPPLY	
• Key in OFF position. • Disconnect: Generic Electronic Module (GEM) C201a. • Disconnect: GEM C201b. • Key in ON position. • Using the following table, measure the voltage between the GEM, harness side and ground. **Connector / Pin / Circuit** C201a / 4 / 400 (LB/BK) C201a / 1 / 1006 (DG/WH) C201b / 2 / 1001 (WH/YE) C201b / 3 / 193 (YE/LG) • **Are the voltages greater than 10 volts?**	**Yes** GO to A2 . **No** REPAIR the circuit(s) in question. TEST the system for normal operation.
A2 CHECK THE GEM GROUND CIRCUIT 397 (BK/WH) FOR OPEN	
• Key in OFF position. • Measure the resistance between the GEM C201b pin 4, circuit 397 (BK/WH), harness side and ground.	**Yes** GO to A3 . **No**

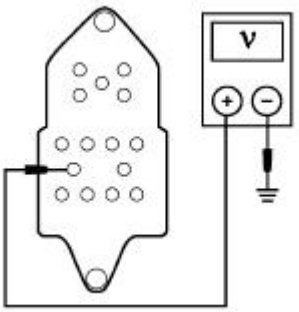
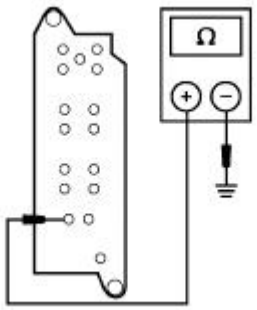
 A0069175 ● **Is the resistance less than 5 ohms?**	REPAIR the circuit(s) in question. TEST the system for normal operation.
A3 CHECK CIRCUIT 397 (BK/WH) FOR SHORT TO POWER	
● Measure the voltage between the GEM C201b pin 4, circuit 397 (BK/WH), harness side and ground.  A0069176 ● **Is any voltage present?**	**Yes** REPAIR the circuit. TEST the system for normal operation. **No** REFER to Section 418-00 .

PINPOINT TEST B: ALL POWER WINDOWS ARE INOPERATIVE — CONVERTIBLE

Test Step	Result / Action to Take
B1 CHECK THE POWER SUPPLY TO THE WINDOW REGULATOR CONTROL SWITCH	
● Key in OFF position. ● Disconnect: Driver Window Regulator Control Switch C537. ● Key in ON position. ● Measure the voltage between driver window regulator control switch C537 pin 15, circuit 400 (LB/BK), harness side and ground.  AN2405-A ● **Is the voltage greater than 10 volts?**	**Yes** GO to B2 . **No** REPAIR the circuit. TEST the system for normal operation.
B2 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
● Measure the resistance between driver window regulator	**Yes**

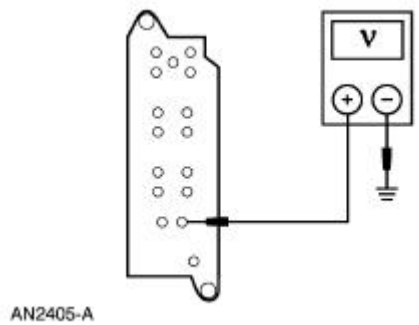
control switch C537 pin 14, circuit 1205 (BK), harness side and ground.  • **Is the resistance less than 5 ohms?**	INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

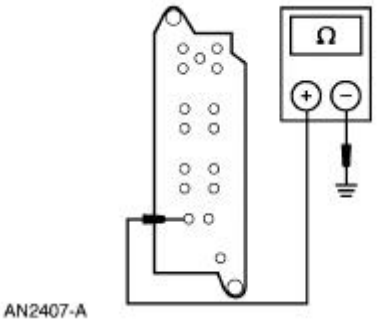
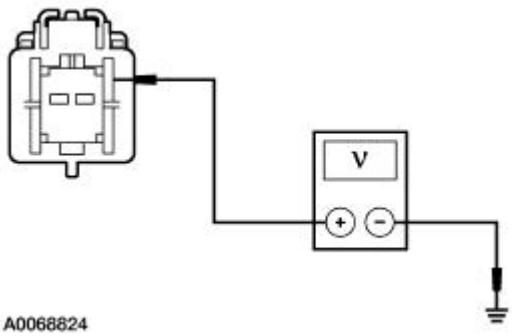
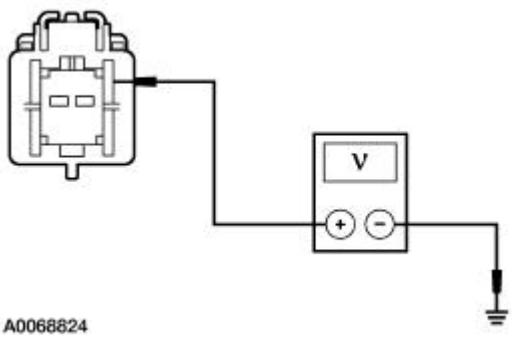
PINPOINT TEST C: ALL POWER WINDOWS ARE INOPERATIVE — COUPE

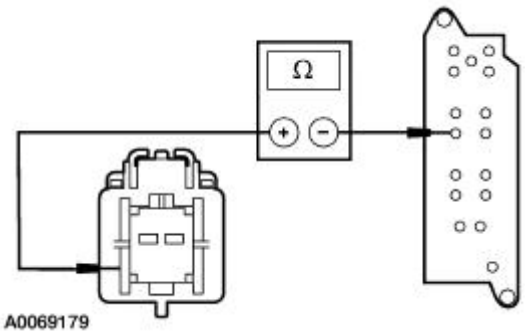
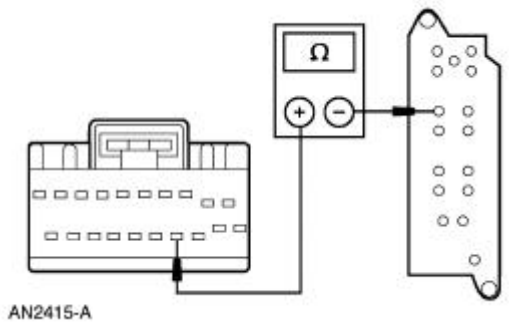
Test Step	Result / Action to Take
C1 CHECK THE POWER SUPPLY TO THE WINDOW REGULATOR CONTROL SWITCH	
• Key in OFF position. • Disconnect: Driver Window Regulator Control Switch C508. • Key in ON position. • Measure the voltage between driver window regulator control switch C508 pin 10, circuit 400 (LB/BK), harness side and ground.  • **Is the voltage greater than 10 volts?**	**Yes** GO to C2. **No** REPAIR the circuit. TEST the system for normal operation.
C2 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
• Measure the resistance between driver window regulator control switch C508 pin 14, circuit 1205 (BK), harness side and ground.  	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

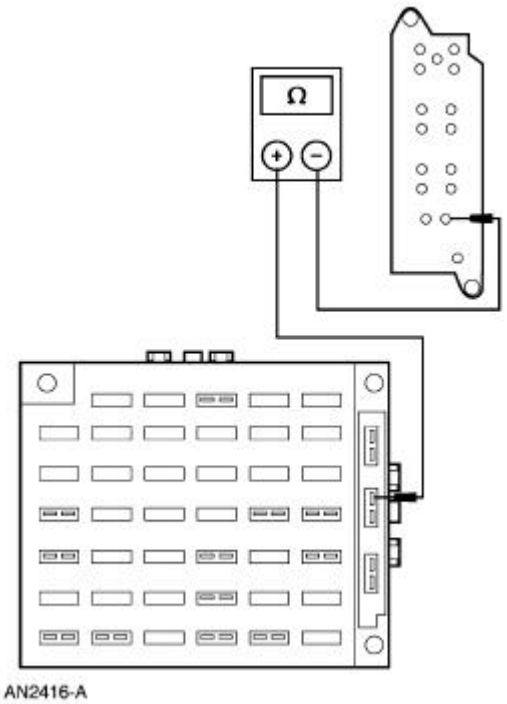
• **Is the resistance less than 5 ohms?**	

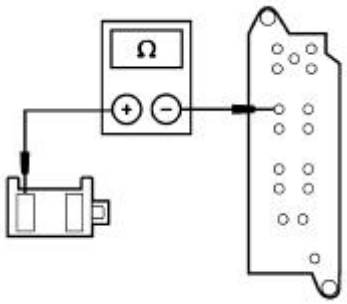
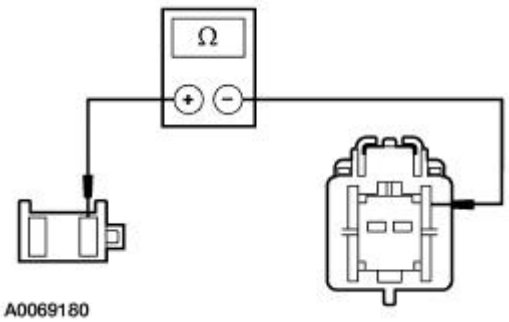
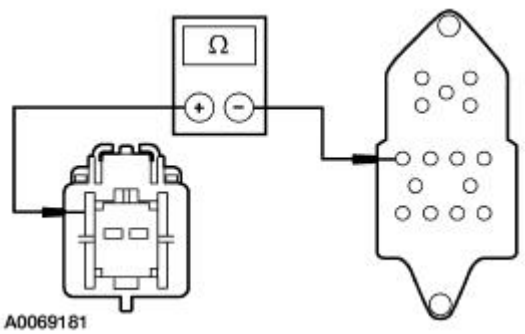
PINPOINT TEST D: A SINGLE POWER WINDOW IS INOPERATIVE — DRIVER, CONVERTIBLE

Test Step	Result / Action to Take
D1 CHECK THE IGNITION SWITCH INPUT TO THE GEM	
• Select GEM PID IGN_A, IGN_R, IGN_S and IGN_KEY. • Insert the ignition key in the ignition switch and turn to each position while monitoring PIDs. • **Did the PID values agree with the ignition switch positions?**	**Yes** GO to D2 . **No** REFER to Section 211-05 for ignition switch diagnosis.
D2 CHECK THE DRIVER WINDOW REGULATOR CONTROL SWITCH INPUT TO THE GEM	
• Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: GEM PID D_UP_SW and D_DN_SW. • Actuate the driver window regulator control switch to the UP and DOWN position. • **Did the PID values agree with the driver window regulator control switch positions?**	**Yes** GO to D9 . **No** GO to D3 .
D3 CHECK THE POWER SUPPLY TO THE WINDOW REGULATOR CONTROL SWITCH	
• Disconnect: Driver Window Regulator Control Switch C537. • Key in ON position. • Measure the voltage between driver window regulator control switch C537 pin 15, circuit 400 (LB/BK), harness side and ground.  • **Is the voltage greater than 10 volts?**	**Yes** GO to D4 . **No** GO to D8 .
D4 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
• Measure the resistance between driver window regulator control switch C537 pin 14, circuit 1205 (BK), harness side and ground.	**Yes** GO to D5 . **No** REPAIR the circuit. TEST the system for normal operation.

 • **Is the resistance less than 5 ohms?**	
D5 CHECK THE DRIVER WINDOW REGULATOR CONTROL SWITCH	
• Carry out the driver window regulator control switch component test. Refer to the Wiring Diagrams Cell 149, Component Testing. • **Did the driver window regulator control switch pass?**	**Yes** GO to D6 . **No** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation.
D6 CHECK CIRCUIT 226 (WH/BK) FOR A SHORT TO BATTERY	
• Key in OFF position. • Disconnect: GEM C201a. • Measure the voltage between GEM C201a pin 2, circuit 226 (WH/BK), harness side and ground.  • Key in ON position. • Measure the voltage between GEM C201a pin 2, circuit 226 (WH/BK), harness side and ground.  • **Is either voltage greater than 10 volts?**	**Yes** REPAIR the circuit. TEST the system for normal operation. **No** GO to D7 .
D7 CHECK CIRCUIT 991 (TN/LB) AND 992 (WH/BK) FOR AN OPEN	

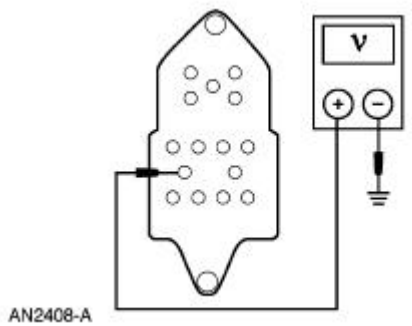
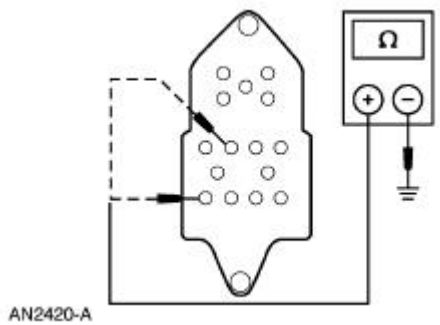
• Key in OFF position. • Disconnect: GEM C201c. • Measure the resistance between driver window regulator control switch C537 pin 8, circuit 991 (TN/LB), harness side and GEM C201a pin 3, circuit 991 (TN/LB), harness side.  • Measure the resistance between driver window regulator control switch C537 pin 6, circuit 992 (WH/BK), harness side and GEM C201c pin 14, circuit 992 (WH/BK), harness side.  • **Are the resistances less than 5 ohms?**	**Yes** INSTALL a new GEM. REFER to Section 419-10 . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
D8 CHECK CIRCUIT 400 (LB/BK) FOR AN OPEN	
• Key in OFF position. • Disconnect: CJB Circuit Breaker 43 (20A). • Measure the resistance between driver window regulator control switch C537 pin 15, circuit 400 (LB/BK), harness side and CJB circuit breaker 43 (20A) output pin, circuit 400 (LB/BK).	**Yes** REPAIR the power supply to CJB circuit breaker 43 (20A). TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

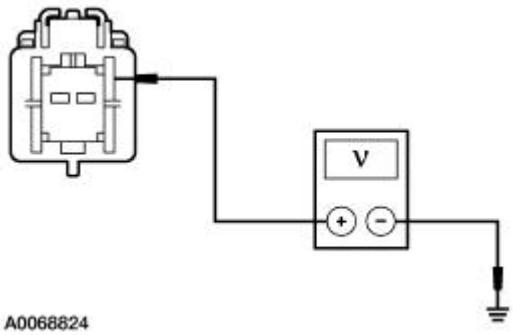
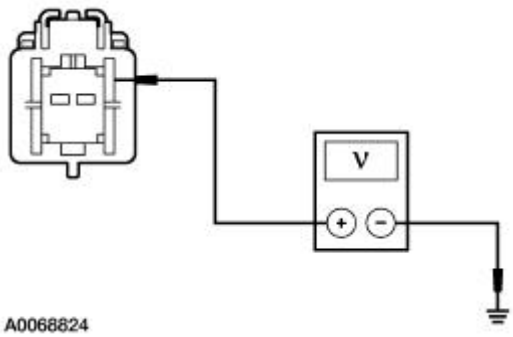
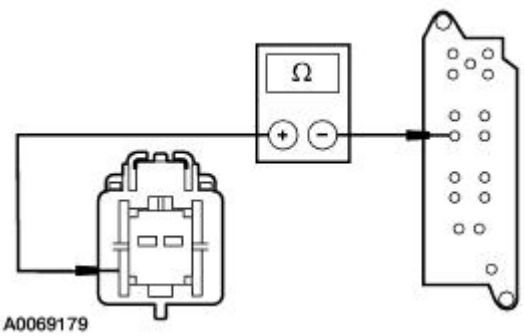
 AN2416-A ● **Is the resistance less than 5 ohms?**	
D9 CHECK THE GEM CONTROL OF THE DRIVER POWER WINDOW	
● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: GEM Active Command FRONT WINDOW CONTROL. ● Trigger DR DOWN ON. ● **Did the driver window move down?**	**Yes** INSTALL a new GEM. REFER to Section 419-10 . TEST the system for normal operation. **No** GO to D10 .
D10 CHECK THE WINDOW REGULATOR MOTOR OPERATION	
● Disconnect: Driver Window Regulator Motor C518. ● Connect a 20 amp fused jumper wire between battery positive and one pin of the window regulator motor (component side). ● Momentarily connect a jumper wire between second pin of the window regulator motor and ground. ● Reverse the jumper wires on the window regulator motor. ● **Did the window regulator motor operate in both directions?**	**Yes** GO to D11 . **No** INSTALL a new window regulator motor. REFER to Motor—Window Regulator in this section. TEST the system for normal operation.
D11 CHECK CIRCUIT 992 (WH/BK) FOR AN OPEN BETWEEN THE DRIVER WINDOW MOTOR AND THE WINDOW REGULATOR CONTROL SWITCH	
● Disconnect: Driver Window Regulator Control Switch C537. ● Measure the resistance between driver window regulator control switch C537 pin 6, circuit 992 (WH/BK), harness side and driver window regulator motor C518, circuit 992 (WH/BK), harness side.	**Yes** GO to D12 . **No** REPAIR the circuit. TEST the system for normal operation.

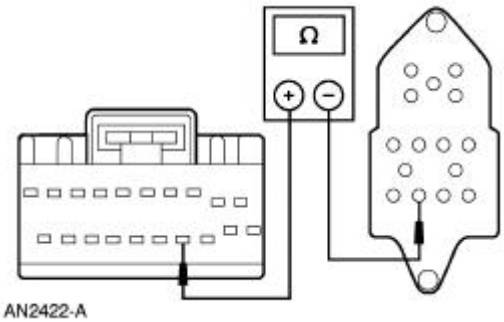
 AN2417-A ● **Is the resistance less than 5 ohms?**	
D12 CHECK CIRCUIT 226 (WH/BK) FOR AN OPEN	
● Disconnect: GEM C201a. ● Measure the resistance between GEM C201a pin 2, circuit 226 (WH/BK), harness side and driver window regulator motor C518, circuit 226 (WH/BK), harness side.  A0069180 ● **Is the resistance less than 5 ohms?**	**Yes** GO to D13 . **No** REPAIR the circuit. TEST the system for normal operation.
D13 CHECK CIRCUIT 400 (LB/BK) FOR AN OPEN TO THE GEM	
● Key in OFF position. ● Disconnect: CJB Circuit Breaker 43 (20A). ● Measure the resistance between GEM C021a pin 4, circuit 400 (LB/BK), harness side and CJB circuit breaker 43 (20A) output pin, circuit 400 (LB/BK).  A0069181 ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new GEM. REFER to Section 419-10 . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

PINPOINT TEST E: A SINGLE POWER WINDOW IS INOPERATIVE — DRIVER, COUPE

Test Step	Result / Action to Take
E1 CHECK THE IGNITION SWITCH INPUT TO THE GEM	
● Select GEM PID IGN_A, IGN_R, IGN_S and IGN_KEY. ● Insert the ignition key in the ignition switch and turn to each	**Yes** GO to E2 .

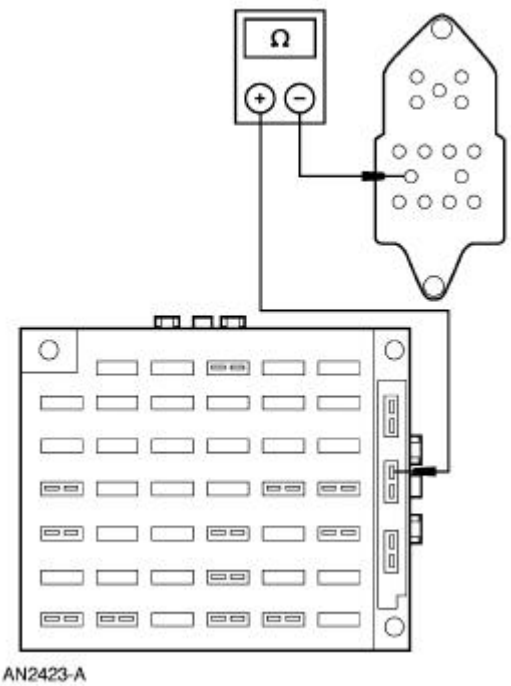
position while monitoring PIDs. ● **Did the PID values agree with the ignition switch positions?**	**No** REFER to Section 211-05 for ignition switch diagnosis.
E2 CHECK THE DRIVER WINDOW REGULATOR CONTROL SWITCH INPUT TO THE GEM	
● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: GEM PID D_UP_SW and D_DN_SW. ● Actuate the driver window regulator control switch to the UP and DOWN position. ● **Did the PID values agree with the driver window regulator control switch positions?**	**Yes** GO to E9 . **No** GO to E3 .
E3 CHECK THE POWER SUPPLY TO THE WINDOW REGULATOR CONTROL SWITCH	
● Disconnect: Driver Window Regulator Control Switch C508. ● Key in ON position. ● Measure the voltage between driver window regulator control switch C508 pin 10, circuit 400 (LB/BK), harness side and ground.  ● **Is the voltage greater than 10 volts?**	**Yes** GO to E4 . **No** GO to E8 .
E4 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
● Measure the resistance between driver window regulator control switch C508 pin 7, circuit 1205 (BK), harness side and ground; and between driver window regulator control switch C508 pin 12, circuit 1205 (BK), harness side and ground.  ● **Is the resistance less than 5 ohms?**	**Yes** GO to E5 . **No** REPAIR the circuit. TEST the system for normal operation.
E5 CHECK THE DRIVER WINDOW REGULATOR CONTROL SWITCH	
● Carry out the driver window regulator control switch component test. Refer to the Wiring Diagrams Cell 149, Component Testing. ● **Did the driver window regulator control switch pass?**	**Yes** GO to E6 . **No** INSTALL a new driver

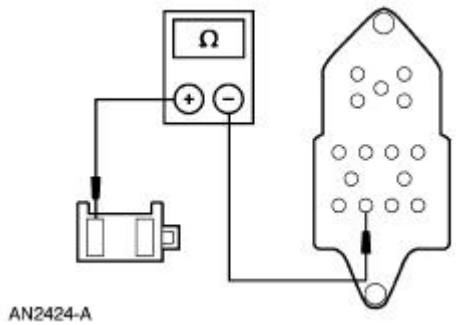
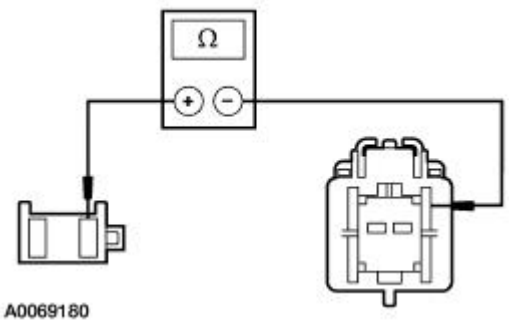
	window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation.
E6 CHECK CIRCUIT 226 (WH/BK) FOR A SHORT TO BATTERY ● Key in OFF position. ● Disconnect: GEM C201a. ● Measure the voltage between GEM C201a pin 2, circuit 226 (WH/BK), harness side and ground.  A0068824 ● Key in ON position. ● Measure the voltage between GEM C201a pin 2, circuit 226 (WH/BK), harness side and ground.  A0068824 ● **Is either voltage greater than 10 volts?**	**Yes** REPAIR the circuit. TEST the system for normal operation. **No** GO to E7.
E7 CHECK CIRCUIT 991 (TN/LB) AND 992 (WH/BK) FOR AN OPEN ● Key in OFF position. ● Disconnect: GEM C201c. ● Measure the resistance between driver window regulator control switch C508 pin 6, circuit 991 (TN/LB), harness side and GEM C201a pin 3, circuit 991 (TN/LB), harness side.  A0069179 ● Measure the resistance between driver window regulator control switch C508 pin 13, circuit 992 (WH/BK), harness side and GEM C201c pin 14, circuit 992 (WH/BK), harness side.	**Yes** INSTALL a new GEM. REFER to Section 419-10. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

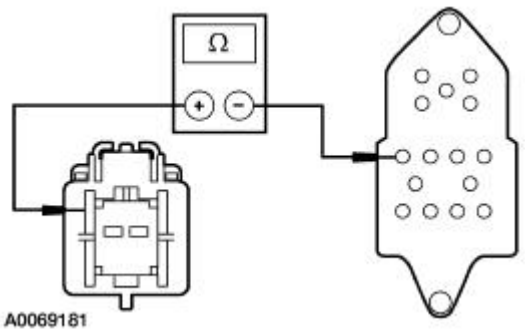


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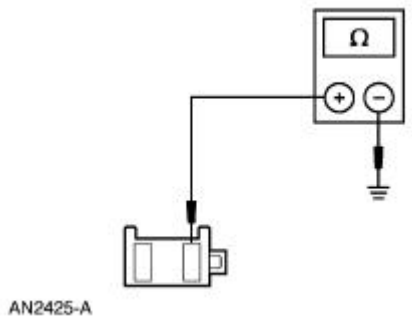
- **Are the resistances less than 5 ohms?**

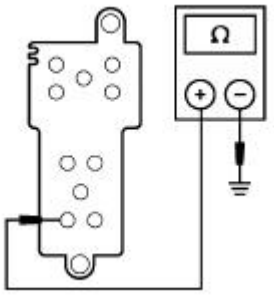
E8 CHECK CIRCUIT 400 (LB/BK) FOR AN OPEN	
• Key in OFF position. • Disconnect: CJB Circuit Breaker 43 (20A). • Measure the resistance between driver window regulator control switch C508 pin 10, circuit 400 (LB/BK), harness side and CJB circuit breaker 43 (20A) output pin, circuit 400 (LB/BK).  AN2423-A • **Is the resistance less than 5 ohms?**	**Yes** REPAIR the power supply to CJB circuit breaker 43 (20A). TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
E9 CHECK THE GEM CONTROL OF THE DRIVER POWER WINDOW	
• Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: GEM Active Command FRONT WINDOW CONTROL. • Trigger DR DOWN ON. • **Did the driver window move down?**	**Yes** INSTALL a new GEM. REFER to Section 419-10 . TEST the system for normal operation. **No** GO to E10 .
E10 CHECK THE WINDOW REGULATOR MOTOR OPERATION	
• Disconnect: Driver Window Regulator Motor C518. • Connect a 20 amp fused jumper wire between battery positive and one pin of the window regulator motor (component side). • Momentarily connect a jumper wire between the second pin of	**Yes** GO to E11 . **No**

the window regulator motor and ground. • Reverse the jumper wires on the window regulator motor. • **Did the window regulator motor operate in both directions?**	INSTALL a new window regulator motor. REFER to Motor—Window Regulator in this section. TEST the system for normal operation.
E11 CHECK CIRCUIT 992 (WH/BK) FOR AN OPEN BETWEEN THE DRIVER WINDOW MOTOR AND THE WINDOW REGULATOR CONTROL SWITCH	
• Disconnect: Driver Window Regulator Control Switch C508. • Measure the resistance between driver window regulator control switch C508 pin 13, circuit 992 (WH/BK), harness side and driver window motor C518, circuit 992 (WH/BK), harness side.  • **Is the resistance less than 5 ohms?**	**Yes** GO to E12 . **No** REPAIR the circuit. TEST the system for normal operation.
E12 CHECK CIRCUIT 226 (WH/BK) FOR AN OPEN	
• Disconnect: GEM C201a. • Measure the resistance between GEM C201a pin 2, circuit 226 (WH/BK), harness side and driver window motor C518, circuit 226 (WH/BK), harness side.  • **Is the resistance less than 5 ohms?**	**Yes** GO to E13 . **No** REPAIR the circuit. TEST the system for normal operation.
E13 CHECK CIRCUIT 400 (LB/BK) FOR AN OPEN TO THE GEM	
• Key in OFF position. • Disconnect: CJB Circuit Breaker 43 (20A). • Measure the resistance between GEM C201a pin 4 circuit 400 (LB/BK), harness side and CJB circuit breaker 43 (20A) output pin, circuit 400 (LB/BK).	**Yes** INSTALL a new GEM. REFER to Section 419-10 . TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

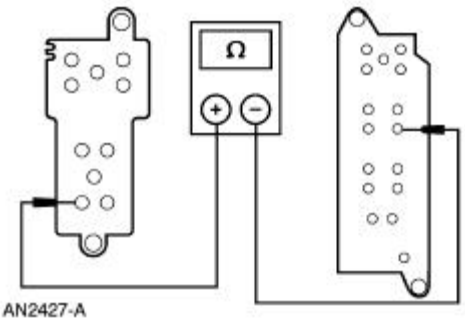
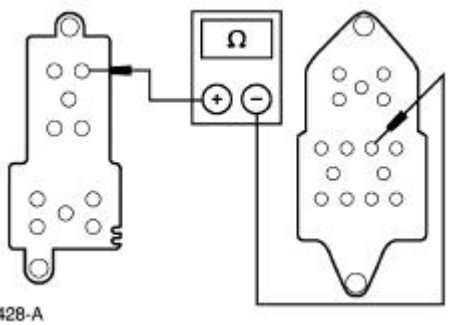
 A0069181 ● **Is the resistance less than 5 ohms?**	

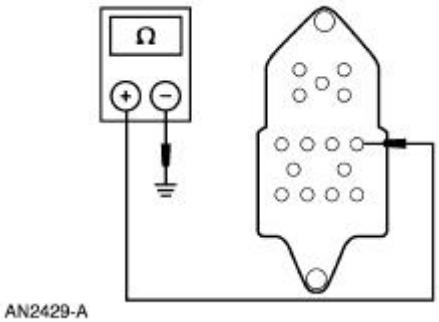
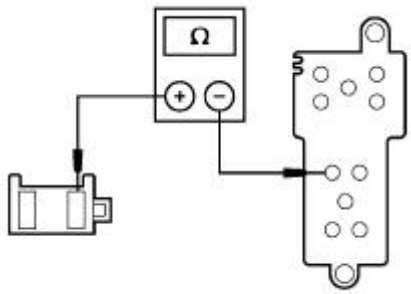
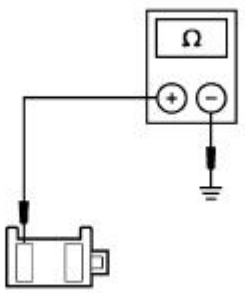
PINPOINT TEST F: A SINGLE POWER WINDOW IS INOPERATIVE — PASSENGER FRONT

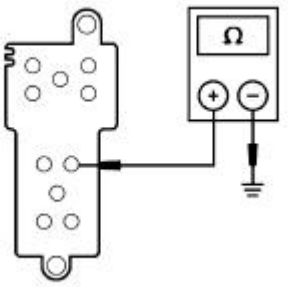
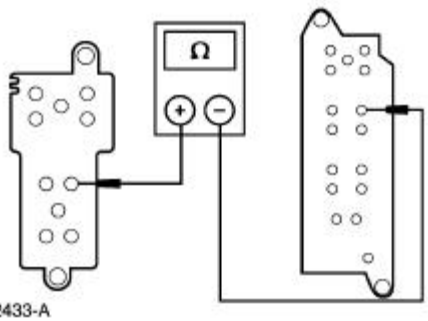
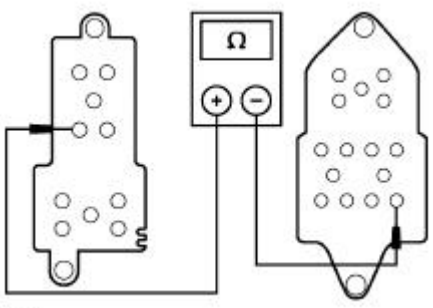
Test Step	Result / Action to Take
F1 CHECK THE OPERATION FROM THE DRIVER WINDOW REGULATOR CONTROL SWITCH	
● Key in ON position. ● Operate the passenger window from the driver window regulator control switch. ● **Is the passenger window inoperative from the driver window regulator control switch?**	**Yes** GO to F2 . **No** GO to F15 .
F2 CHECK CIRCUIT 334 (RD/YE) FOR GROUND	
● Key in OFF position. ● Disconnect: Passenger Window Regulator Motor C623. ● Measure the resistance between passenger window regulator motor C623, circuit 334 (RD/YE), harness side and ground.  AN2425-A ● **Is the resistance less than 5 ohms?**	**Yes** GO to F8 . **No** GO to F3 .
F3 CHECK CIRCUIT 314 (TN/LB) FOR GROUND	
● Disconnect: Passenger Window Regulator Control Switch C629. ● Measure the resistance between passenger window regulator control switch C629 pin 9, circuit 314 (TN/LB), harness side and ground.	**Yes** GO to F7 . **No** GO to F4 for convertible or GO to F5 for coupe.

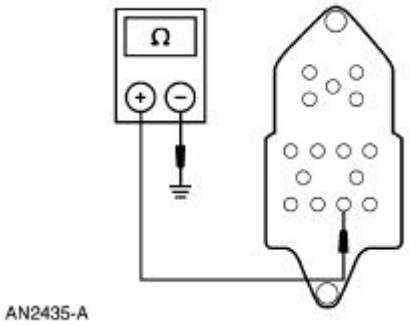
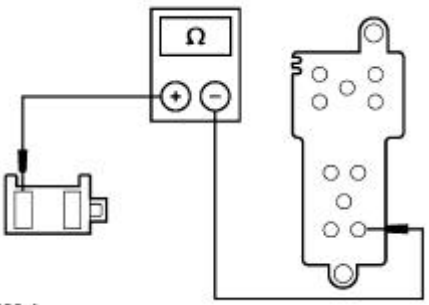


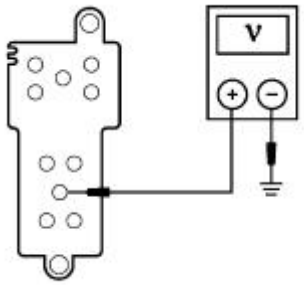
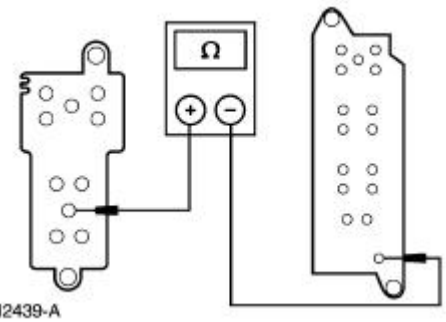
- **Is the resistance less than 5 ohms?**

F4 CHECK CIRCUIT 314 (TN/LB) FOR AN OPEN (CONVERTIBLE)	
• Disconnect: Driver Window Regulator Control Switch C537. • Measure the resistance between driver window regulator control switch C537 pin 9, circuit 314 (TN/LB), harness side and passenger window regulator control switch C629 pin 9, circuit 314 (TN/LB), harness side.  • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
F5 CHECK CIRCUIT 314 (TN/LB) FOR AN OPEN (COUPE)	
• Disconnect: Driver Window Regulator Control Switch C508. • Measure the resistance between driver window regulator control switch C508 pin 8, circuit 314 (TN/LB), harness side and passenger window regulator control switch C629 pin 9, circuit 314 (TN/LB), harness side.  • **Is the resistance less than 5 ohms?**	**Yes** GO to F6 . **No** REPAIR the circuit. TEST the system for normal operation.
F6 CHECK PASSENGER UP GROUND CIRCUIT 1205 (BK) FOR AN OPEN	
• Measure the resistance between driver window regulator control switch C508 pin 9, circuit 1205 (BK), harness side and ground.	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this

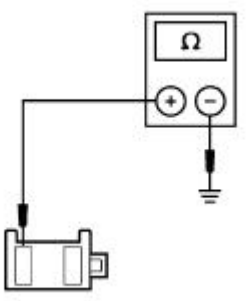
 AN2429-A ● **Is the resistance less than 5 ohms?**	section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
F7 CHECK CIRCUIT 334 (RD/YE) FOR AN OPEN	
● Measure the resistance between passenger window regulator control switch C629 pin 6, circuit 334 (RD/YE), harness side and passenger window motor C623, circuit 334 (RD/YE), harness side.  AN2430-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new passenger window regulator control switch. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
F8 CHECK CIRCUIT 333 (YE/RD) FOR GROUND	
● Measure the resistance between passenger window regulator motor C623, circuit 333 (YE/RD), harness side and ground.  AN2431-A ● **Is the resistance less than 5 ohms?**	**Yes** GO to F14 . **No** GO to F9 .
F9 CHECK CIRCUIT 313 (WH/YE) FOR GROUND	
● Disconnect: Passenger Window Regulator Control Switch C629. ● Measure the resistance between passenger window regulator control switch C629 pin 7, circuit 313 (WH/YE), harness side and ground.	**Yes** GO to F13 . **No** GO to F10 for convertible or GO to F11 for coupe.

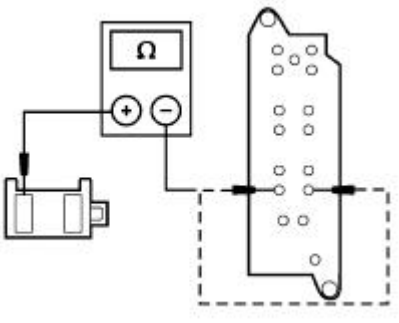
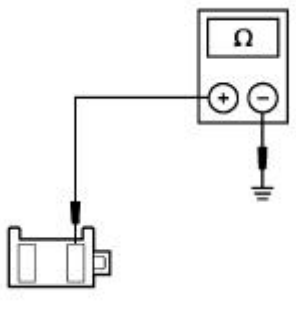
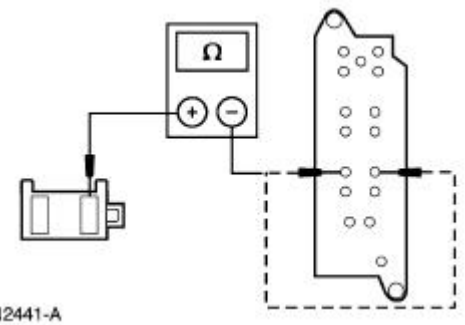
 AN2432-A ● **Is the resistance less than 5 ohms?**	
F10 CHECK CIRCUIT 313 (WH/YE) FOR AN OPEN (CONVERTIBLE)	
● Disconnect: Driver Window Regulator Control Switch C537. ● Measure the resistance between driver window regulator control switch C537 pin 7, circuit 313 (WH/YE), harness side and passenger window regulator control switch C629 pin 7, circuit 313 (WH/YE), harness side.  AN2433-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
F11 CHECK CIRCUIT 313 (WH/YE) FOR AN OPEN (COUPE)	
● Disconnect: Driver Window Regulator Control Switch C508. ● Measure the resistance between driver window regulator control switch C508 pin 15, circuit 313 (WH/YE), harness side and passenger window regulator control switch C629 pin 7, circuit 313 (WH/YE), harness side.  AN2434-A ● **Is the resistance less than 5 ohms?**	**Yes** GO to F12 . **No** REPAIR the circuit. TEST the system for normal operation.
F12 CHECK PASSENGER DOWN GROUND CIRCUIT 1205 (BK) FOR AN OPEN	
● Measure the resistance between driver window regulator control switch C508 pin 14, circuit 1205 (BK), harness side and ground.	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this

 AN2435-A ● **Is the resistance less than 5 ohms?**	section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
F13 CHECK CIRCUIT 333 (YE/RD) FOR AN OPEN	
● Measure the resistance between passenger window regulator control switch C629 pin 10, circuit 333 (YE/RD), harness side and passenger window regulator motor C623, circuit 333 (YE/RD), harness side.  AN2436-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new passenger window regulator control switch. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
F14 CHECK THE DRIVER WINDOW REGULATOR CONTROL SWITCH	
● Carry out the driver window regulator control switch component test. REFER to Wiring Diagrams Cell 149, Component Testing. ● **Is the driver window regulator control switch OK?**	**Yes** INSTALL a new passenger window regulator motor. REFER to Motor—Window Regulator in this section. TEST the system for normal operation. **No** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation.
F15 CHECK THE POWER SUPPLY TO THE PASSENGER WINDOW REGULATOR CONTROL SWITCH	
● Key in OFF position. ● Disconnect: Passenger Window Regulator Control Switch C629. ● Key in ON position. ● Measure the voltage between passenger window regulator control switch C629 pin 8, circuit 194 (PK), harness side and ground.	**Yes** INSTALL a new passenger window regulator control switch. TEST the system for normal operation. **No**

 AN2438-A ● **Is the voltage greater than 10 volts?**	For convertible, GO to F16 . For coupe, REPAIR the circuit. TEST the system for normal operation.
F16 CHECK CIRCUIT 194 (PK) FOR AN OPEN ● Key in OFF position. ● Disconnect: Driver Window Regulator Control Switch C537. ● Measure the resistance between driver window regulator control switch C537 pin 16, circuit 194 (PK), harness side and passenger window regulator control switch C629 pin 8, circuit 194 (PK), harness side.  AN2439-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

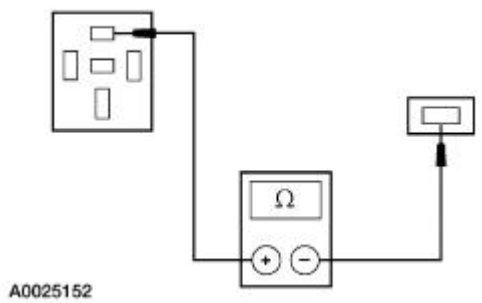
PINPOINT TEST G: A SINGLE POWER WINDOW IS INOPERATIVE — REAR, CONVERTIBLE ONLY

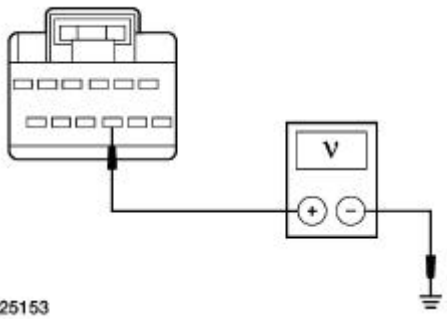
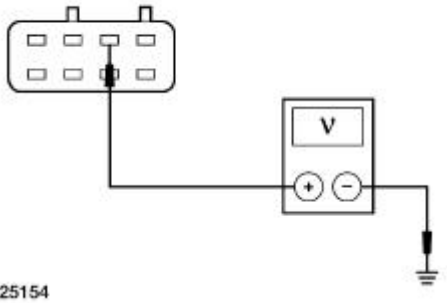
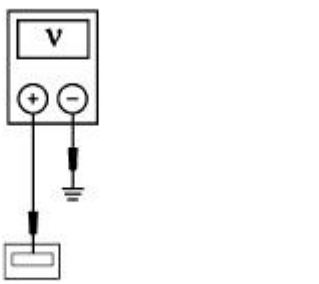
Test Step	Result / Action to Take
G1 CHECK CIRCUIT 316 (YE/LB) OR 319 (YE/BK) FOR GROUND ● Disconnect: Rear Window Regulator Motor C3118 LH or C3119 RH. ● Measure the resistance between left rear window regulator motor C3118, circuit 316 (YE/LB), harness side and ground; or between right rear window regulator motor C3119, circuit 319 (YE/BK), harness side and ground.  AN2431-A ● **Is the resistance less than 5 ohms?**	**Yes** GO to G3 . **No** GO to G2 .

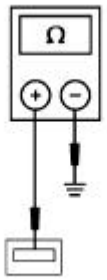
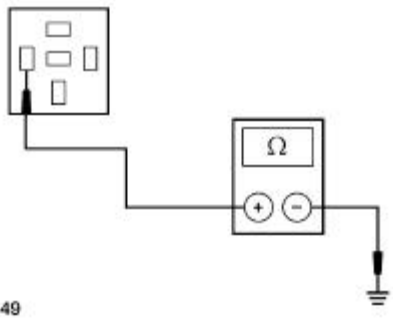
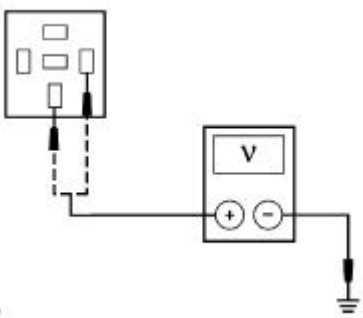
G2 CHECK CIRCUIT 316 (YE/LB) OR 319 (YE/BK) FOR AN OPEN • Disconnect: Driver Window Regulator Control Switch C537. • Measure the resistance between left rear window regulator motor C3118, circuit 316 (YE/LB), harness side and driver window regulator control switch C537 pin 12, circuit 316 (YE/LB), harness side; or between right rear window regulator motor C3119, circuit 319 (YE/BK), harness side and driver window regulator control switch C537 pin 13, circuit 319 (YE/BK), harness side.  AN2440-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
G3 CHECK CIRCUIT 317 (GY/OG) OR 320 (RD/BK) FOR GROUND • Measure the resistance between left rear window regulator motor C3118, circuit 317 (GY/OG), harness side and ground; or between right rear window regulator motor C3119, circuit 320 (RD/BK), harness side and ground.  AN2425-A • **Is the resistance less than 5 ohms?**	**Yes** GO to G5 . **No** GO to G4 .
G4 CHECK CIRCUIT 317 (GY/OG) OR 320 (RD/BK) FOR AN OPEN • Disconnect: Driver Window Regulator Control Switch C537. • Measure the resistance between left rear window regulator motor C3118, circuit 317 (GY/OG), harness side and driver window regulator control switch C537 pin 10, circuit 317 (GY/OG), harness side; or between right rear window regulator motor C3119, circuit 320 (RD/BK), harness side and driver window regulator control switch C537 pin 11, circuit 320 (RD/BK), harness side.  AN2441-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.

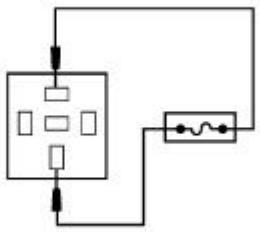
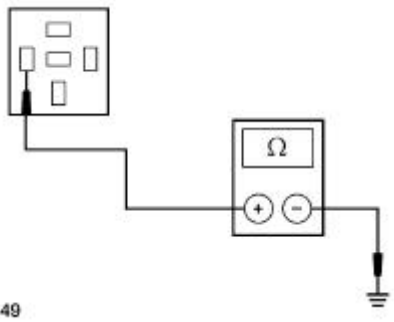
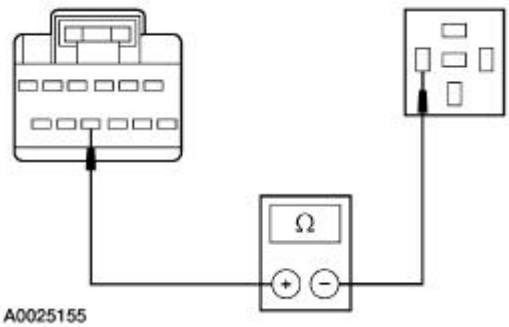
G5 CHECK DRIVER WINDOW REGULATOR CONTROL SWITCH	
• Disconnect: Driver Window Regulator Control Switch C537. • Carry out the driver window regulator control switch component test. REFER to Wiring Diagrams Cell 149, Component Testing. • **Is the driver window regulator control switch OK?**	**Yes** INSTALL a new rear window regulator motor. REFER to Motor—Window Regulator, Quarter in this section. TEST the system for normal operation. **No** INSTALL a new driver window regulator control switch. REFER to Switch—Window Regulator Control in this section. TEST the system for normal operation.

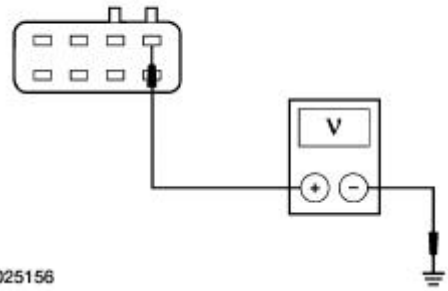
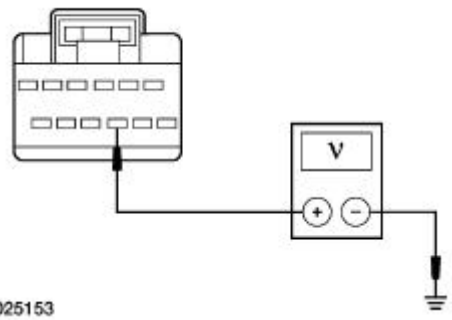
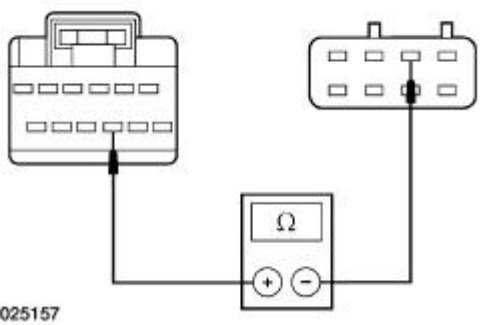
PINPOINT TEST H: THE DEFROST SYSTEM IS INOPERATIVE

Test Step	Result / Action to Take
H1 CHECK POWER TO INDICATOR LIGHT	
• Key in ON position. • Depress the rear window defrost switch to ON. • **Is the rear window defrost switch indicator ON?**	**Yes** GO to H2. **No** GO to H3.
H2 CHECK CIRCUIT 186 (BR/LB) FOR AN OPEN	
• Key in OFF position. • Disconnect: Heated Rear Window Relay. • Disconnect: Heated Rear Window Grid Power Supply Connector C402a. • Measure the resistance between heated rear window relay, circuit 186 (BN/LB), harness side and heated rear window grid C402a, circuit 186 (BN/LB), harness side.  • **Is the resistance less than 5 ohms?**	**Yes** GO to H7. **No** REPAIR the circuit. TEST the system for normal operation.
H3 CHECK THE DIAGNOSTIC TROUBLE CODES (DTCS)	
• Refer to the results from the previous instrument cluster module (ICM) self-test. • **Was DTC B1343 retrieved?**	**Yes** GO to H4.

	No GO to H6 .
H4 CHECK CIRCUIT 175 (BK/YE)	
• Disconnect: ICM C220a. • Key in ON position. • Measure the voltage between ICM C220a pin 9, circuit 175 (BK/YE), harness side and ground.  A0025153 • **Is the voltage greater than 10 volts?**	**Yes** GO to H5 . **No** GO to H16 .
H5 CHECK CIRCUIT 175 (BK/YE) FOR A SHORT TO POWER	
• Disconnect: Rear Window Defrost Switch C241. • Measure the voltage between rear window defrost switch C241 pin 2, circuit 175 (BK/YE), harness side and ground.  A0025154 • **Is the voltage greater than 10 volts?**	**Yes** REPAIR the circuit. CLEAR the DTCs. REPEAT the self-test. **No** INSTALL a new rear window defrost switch. REFER to Rear Window Defrost Switch in this section. TEST the system for normal operation.
H6 CHECK THE REAR HEATED WINDOW GRID POWER	
• Disconnect: Heated Rear Window Grid Power Supply Connector C402a. • Key in ON position. • Depress the rear window defrost switch to ON. • Measure the voltage between heated rear window grid C402a circuit 186 (BN/LB), harness side and ground.  AN1273-A • **Is the voltage greater than 10 volts?**	**Yes** GO to H7 . **No** GO to H8 .
H7 CHECK THE REAR WINDOW GROUND	
• Key in OFF position.	**Yes**

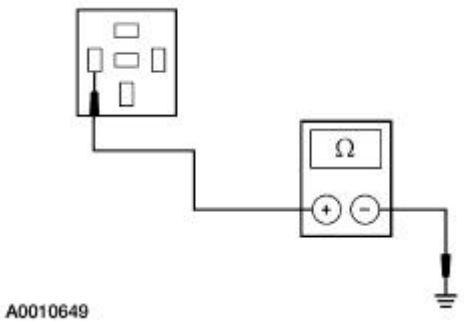
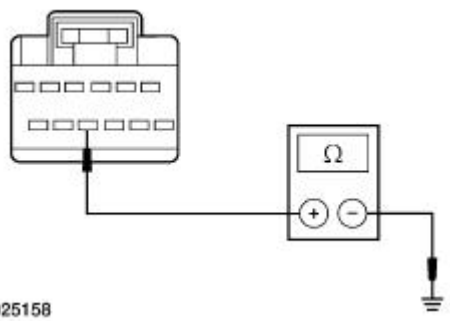
• Disconnect: Heated Rear Window Grid Ground Connector C402b. • Measure the resistance between heated rear window grid C402b, circuit 1205 (BK), harness side and ground.  AN1274-A • **Is the resistance less than 5 ohms?**	CARRY OUT the heated rear window grid wire test. REFER to Grid Wire Test in Component Tests in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
H8 CHECK CIRCUIT 727 (YE/BK)	
• Disconnect: Heated Rear Window Relay. • Depress the rear window defrost switch to ON. • Measure the resistance between heated rear window relay pin 85, circuit 727 (YE/BK), harness side and ground.  A0010649 • **Is the resistance less than 5 ohms?**	**Yes** GO to H9 . **No** GO to H11 .
H9 CHECK CIRCUIT 185 (BK) FOR POWER	
• Measure the voltage between heated rear window relay pin 86 and pin 30, circuit 185 (BK), harness side and ground.  A0010652 • **Are the voltages greater than 10 volts?**	**Yes** GO to H10 . **No** REPAIR the supply circuit. TEST the system for normal operation.
H10 CHECK CIRCUIT 186 (BR/LB) FOR AN OPEN	
• Using a fused jumper wire (15A), jumper across the heated rear window relay pin 30, circuit 185 (BK), harness side and the heated rear window relay pin 87, circuit 186 (BR/LB), harness side.	**Yes** INSTALL a new heated rear window relay. TEST the system for normal operation. **No** REPAIR circuit 186

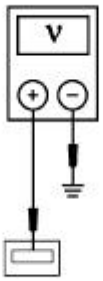
 A0010654 ● **Is the rear window defrost switch indicator ON?**	(BR/LB). TEST the system for normal operation.
H11 CHECK ICM OUTPUT	
● Trigger the ICM active command R DEFRLY to ON. ● Measure the resistance between the heated rear window relay pin 85, circuit 727 (YE/BK), harness side and ground.  A0010649 ● **Is the resistance less than 5 ohms?**	**Yes** GO to H13 . **No** GO to H12 .
H12 CHECK CIRCUIT 727 (YE/BK) FOR AN OPEN	
● Key in OFF position. ● Measure the resistance between ICM C220a pin 10, circuit 727 (YE/BK), harness side and the heated rear window relay pin 85, circuit 727 (YE/BK) , harness side.  A0025155 ● **Is the resistance less than 5 ohms?**	**Yes** GO to H16 . **No** REPAIR the circuit. TEST the system for normal operation.
H13 CHECK POWER TO REAR WINDOW DEFROST SWITCH	
● Disconnect: Rear Window Defrost Switch C241. ● Key in ON position. ● Measure the voltage between the rear window defrost switch C241 pin 1, circuit 883 (PK/LB), harness side and ground.	**Yes** GO to H14 . **No** REPAIR the supply circuit. TEST the system for normal operation.

 A0025156 ● **Is the voltage greater than 10 volts?**	
H14 CHECK INPUT TO THE ICM ● Connect: Rear Window Defrost Switch C241. ● Depress the rear window defrost switch to ON. ● Measure the voltage between ICM C220a pin 9, circuit 175 (BK/YE), harness side and ground.  A0025153 ● **Is the voltage greater than 10 volts?**	**Yes** GO to H16 . **No** GO to H15 .
H15 CHECK CIRCUIT 175 (BK/YE) FOR AN OPEN ● Key in OFF position. ● Measure the resistance between ICM C220a pin 9, circuit 175 (BK/YE), harness side and the rear window defrost switch C241 pin 2, circuit 175 (BK/YE) , harness side.  A0025157 ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new rear window defrost switch. REFER to Rear Window Defrost Switch in this section. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
H16 CHECK THE ICM FOR CORRECT OPERATION ● Disconnect all ICM connectors. ● Check for: ● corrosion ● pushed-out pins ● Connect all ICM connectors and make sure they seat correctly. ● Operate the system and verify the concern is still present. ● **Is the concern still present?**	**Yes** INSTALL a new ICM. REFER to Section 413-01 . CLEAR the DTCs. REPEAT the self-test. **No** The system is operating correctly at this time. Concern may have been

	caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

PINPOINT TEST I: THE DEFROST SYSTEM WILL NOT SHUT OFF AUTOMATICALLY

Test Step	Result / Action to Take
I1 CHECK CIRCUIT 727 (YE/BK)	
• Disconnect: Heated Rear Window Relay. • Key in ON position. • Depress the rear window defroster switch to OFF. • Measure the resistance between heated rear window relay pin 85, circuit 727 (YE/BK) , harness side and ground.  A0010649 • **Is the resistance greater than 10,000 ohms?**	**Yes** GO to I3 . **No** GO to I2 .
I2 CHECK CIRCUIT 727 (YE/BK) FOR A SHORT TO GROUND	
• Key in OFF position. • Measure the resistance between instrument cluster module (ICM) C220a pin 10, circuit 727 (YE/BK) , harness side and ground.  A0025158 • **Is the resistance greater than 10,000 ohms?**	**Yes** GO to I4 . **No** REPAIR the circuit. TEST the system for normal operation.
I3 CHECK CIRCUIT 186 (BN/LB) FOR A SHORT TO POWER	
• Disconnect: Heated Rear Window Grid Power Supply Connector C402a. • Measure the voltage between heated rear window grid C402a circuit 186 (BN/LB), harness side and ground.	**Yes** REPAIR the circuit. TEST the system for normal operation. **No** INSTALL a new heated rear window relay. TEST the system for normal operation.

 AN1273-A ● **Is the voltage greater than 10 volts?**	
I4 CHECK THE ICM FOR CORRECT OPERATION ● Disconnect all ICM connectors. ● Check for: ● corrosion ● pushed-out pins ● Connect all ICM connectors and make sure they seat correctly. ● Operate the system and verify the concern is still present. ● **Is the concern still present?**	**Yes** INSTALL a new ICM. REFER to Section 413-01 . CLEAR the DTCs. REPEAT the self-test. **No** The system is operating correctly at this time. Concern may have been caused by a loose or corroded connector. CLEAR the DTCs. REPEAT the self-test.

Component Tests

Grid Wire Test

1. Using a bright lamp inside the vehicle, inspect the wire grid from the exterior. A broken grid wire will appear as a brown spot.

2. Run the engine at idle. Set the rear window defrost switch to ON. The indicator light should come on.

3. Working from the interior of the vehicle with a voltmeter, contact the broad red-brown stripes of the rear glass window positive lead to battery side and negative lead to ground side. The meter should read 10-13 volts. A lower voltage reading indicates a loose ground connection.

4. Contact a good ground point with the negative lead of the meter. The voltage reading should not differ.

5. With the negative lead of the meter grounded, touch each grid line of the heated rear window glass at its midpoint with the positive lead. A reading of approximately 6 volts indicates that the line is good. A reading of zero volts indicates that the line is broken between the midpoint and the B+ side of the grid line. A reading of 12 volts indicates that the circuit is broken between the midpoint of the grid line and ground.

Heated Window Grid Wire Repair

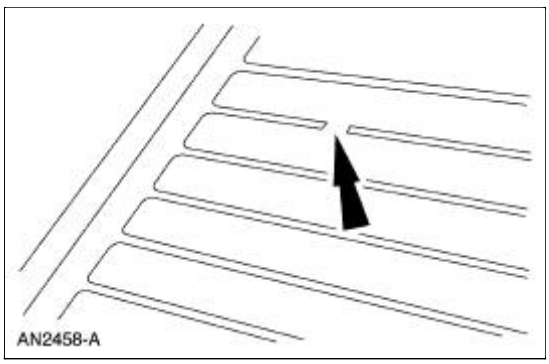
Material

Item	Specification
Dark Walnut Metallic Acrylic Lacquer Touch-up Paint ALBZ-19500-5858A or equivalent	ESR-M2-P100-C
Rear Window Defroster Repair D8AZ-19562-AA or equivalent	WSB-M4J58-B

1. **NOTE:** A single break or any breaks which exceed 25 mm (1 inch) in one grid cannot be repaired. Install a new rear window glass.

   NOTE: If the first layer of the heated rear window grid (brown) is damaged or missing, it will be necessary to apply touch-up paint on the glass prior to applying the silver rear window defroster repair.

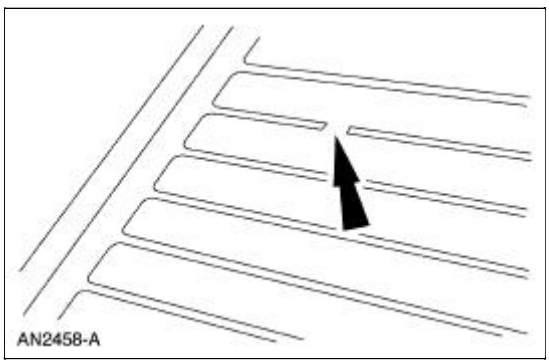
   Repair any inoperative grid wires using rear window defroster repair.



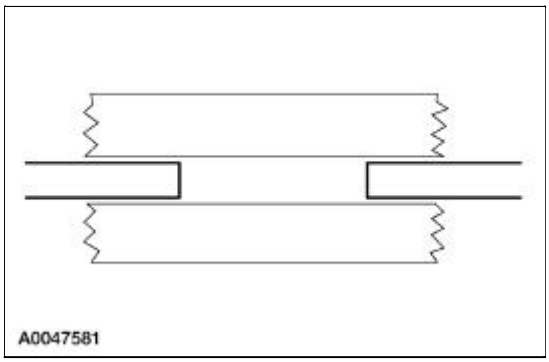
2. Bring the vehicle up to room temperature of at least 16° C (60° F) or above.

3. Clean the entire grid line repair area with a non-alcohol based window cleaner and 0000 steel wool.

4. Mark the location of the grid break on the exterior of the rear window glass.



5. Using cellulose tape, mask the area directly above and below the grid break. The break area should be at the center of the mask.



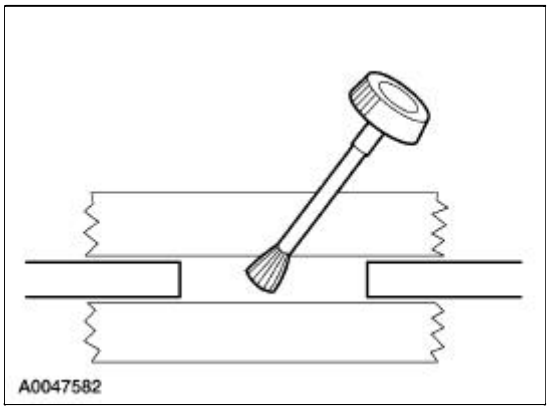
6. **NOTE:** If the brown layer is not broken or missing, apply only the silver grid repair compound to the break.

   NOTE: If both the brown and silver layers of the grid are broken or missing, apply a coating of the brown touch-up paint across the break in the grid line first. Do not overlap the silver grid line with the brown paint . Several applications may be necessary to achieve a color match.

   NOTE: Extend the silver repair coating at least 6.35 mm (0.25 inch) on both sides of the break area.

   NOTE: Allow at least five minutes of drying time between applications.

   Apply the repair coating to the grid break area in several smooth, continuous strokes. Apply three applications of the grid repair compound.



7. After five minutes or after the repair area has dried completely, remove the mask.

8. **CAUTION: Be careful not to damage the grid line with the razor blade. If this occurs, additional repair may be necessary.**

   Remove any excess repair compound above or below the grid line with a razor blade.

9. **NOTE:** The repair coating will air-dry in approximately one minute and can be energized within three minutes.

   NOTE: Optimum adhesion occurs after approximately 24 hours.

   After optimum hardness is achieved, clean the repaired area with a non-alcohol based window cleaner.

Lead Terminal Repair

Special Tool(s)

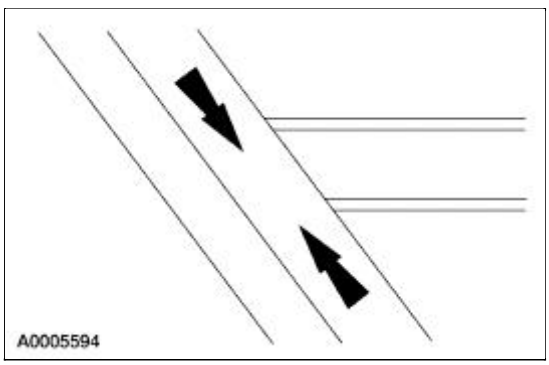
 ST1110-A	Heat Gun 107-R0300 or equivalent

Material

Item	Specification
Rear Window Defroster Repair D8AZ-19562-AA	WSB-M4J58-B

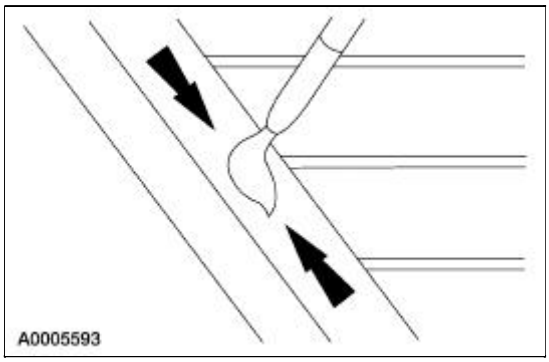
1. **NOTE:** The rear window glass must be at room temperature at the time of the repair.

   Clean the bus bar in the area to be repaired with steel wool (3/0 to 4/0 grade).



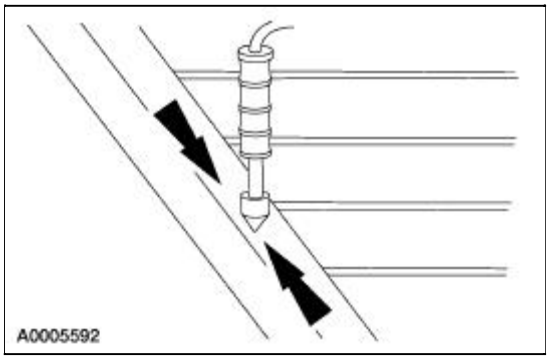
2. **NOTE:** Allow 10 minutes of drying time between the coats.

   Apply three coats of rear window defroster repair to the surface.



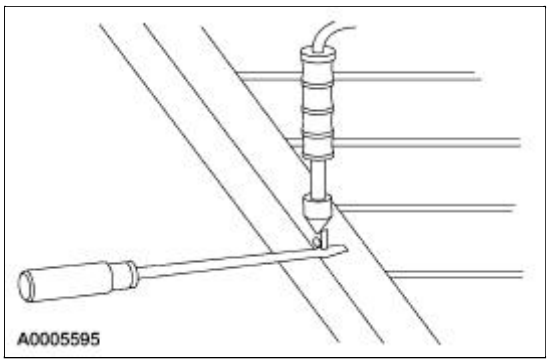
3. **CAUTION: Do not overheat the rear window glass or damage to the rear window glass may occur.**

Tin the bus bar repair area with solder.



4. **CAUTION: To prevent overheating the rear window glass, remove the soldering gun as soon as the solder flows.**

   Preheat the rear window glass in the area to be repaired using the special tool and solder the terminal to the bus bar.

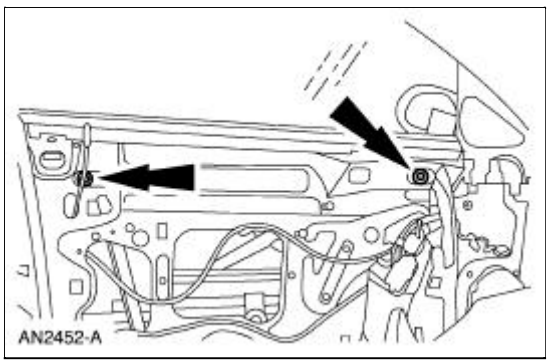


5. **NOTE:** Turn the heated rear window switch ON for five minutes prior to the final inspection of the repair.

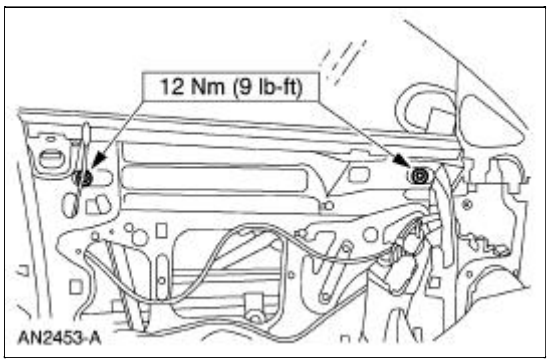
   Apply rear window defroster repair to the area as needed.

Door Window Glass Adjustment —Height Stop Adjustment

1. Close the front door.
2. Loosen the screws.

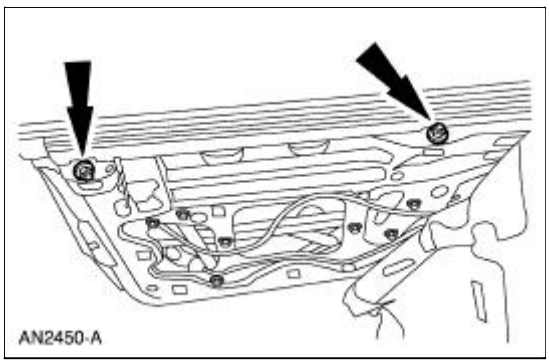


3. Raise the door window glass to the desired height.
4. Tighten the screws.

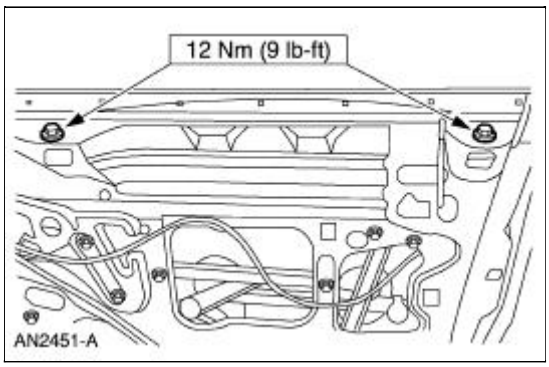


Door Window Glass Adjustment —Stabilizer

1. Raise the door window glass to the full up position.
2. Loosen the bolts.

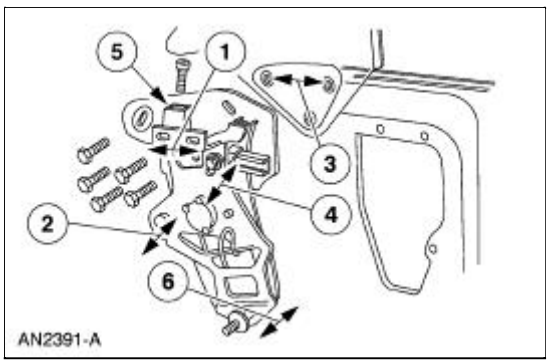


3. Push the door window glass inner stabilizers firmly against the door window glass.
4. Tighten the bolts.



Rear Quarter Window Glass Adjustment —Convertible

1. Adjust the quarter window glass for correct fit.
    1. horizontal adjustment
    2. regulator plate tilt
    3. glass to regulator tilt
    4. front high/low up stop
    5. rear high/low/tilt channel stop
    6. inboard/outboard tilt

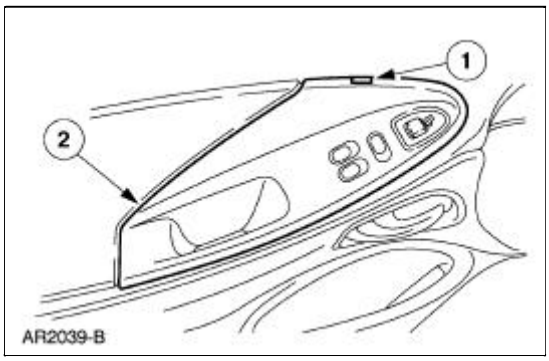


Switch —Window Regulator Control

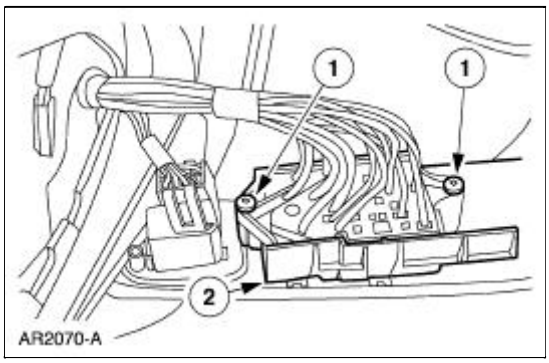
Removal

1. **CAUTION: Use a shop towel or similar material between the tool and the door trim panel or damage to the door trim panel may occur.**

   Position the window regulator switch plate aside.
   1. Pull at the service notch.
   2. Lift to release the clip at the rear edge.



2. Remove the window regulator control switch.
   1. Remove the screws.
   2. Disconnect the connectors.



Installation

1. To install, reverse the removal procedure.

Rear Window Defrost Switch

Removal and Installation

1. Remove the instrument panel center finish panel. For additional information, refer to Section 501-12 .
2. Release the clips and remove the rear window defrost switch.
3. To install, reverse the removal procedure.

Rear Window Glass

Special Tool(s)

 ST1109-A	Rotunda Pneumatic Knife with Offset Blade 107-R1511 or equivalent
 ST2085-A	The Pumper 164-R2459 or equivalent
 ST1320-A	Rotunda Interior Auto Glass Cut-Out Knife Kit 164-R2450 or equivalent

Removal

Convertible

1. For removal of the back window glass, refer to Section 501-18 .

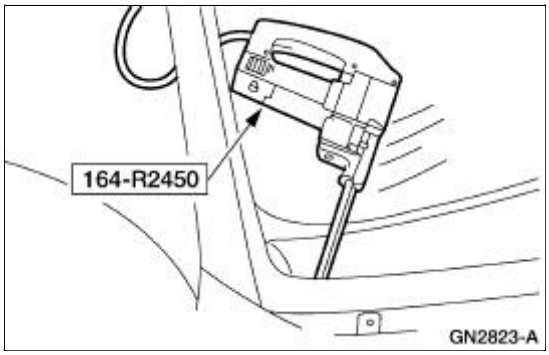
Coupe

WARNING: To prevent glass splinters from entering eyes or cutting hands, wear safety glasses and heavy gloves when cutting glass from the vehicle.

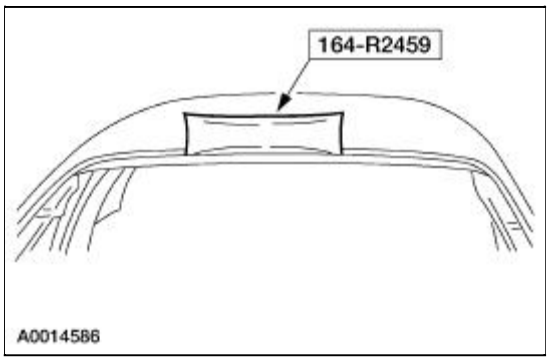
2. Remove the roof side trim moulding. For additional information, refer to Section 501-08 .
3. Lower the rear portion of the headliner.
4. Remove the outer lip of the moulding using a utility knife.
5. Using a soft brush or vacuum, remove any dirt or foreign material from the pinch weld.
6. **CAUTION: Care must be taken to prevent scratching the pinch weld.**

   NOTE: Lubricate the existing urethane adhesive with water to aid the special tool while cutting.

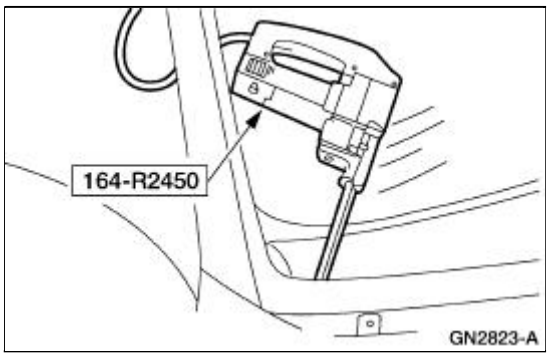
   Using the special tool, starting at the top center of the back window glass, cut the urethane adhesive from the glass and work down the sides.



7. Using the special tool, distance the back window glass from the body.



8. Using the special tool, cut the remaining urethane adhesive and remove the back window glass



9. Using a soft brush or vacuum, clean the pinch weld.

Installation

Convertible

1. For installation of the back window glass, refer to Section 501-18 .

Coupe

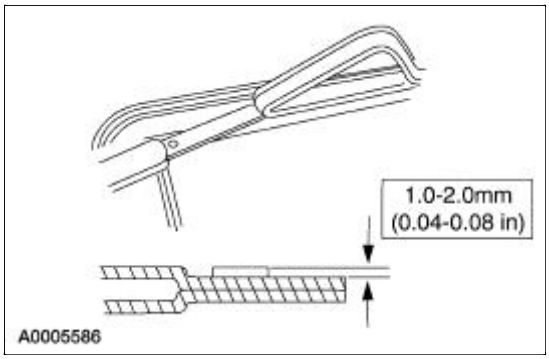
CAUTION: After installing the urethane installed back window glass, the vehicle should not be driven until the urethane adhesive has cured. The curing time at temperatures above 13° C (55°F) and relative humidity above 50% is 12-24 hours (Refer to ESSEX drive away chart for cure times as temperatures and humidity vary.). Inadequate curing of the urethane adhesive may adversely affect the strength of the urethane adhesive bond.

2. Dry-fit the back window glass by centering it side-to-side and by adjusting the setting blocks (if equipped) to get the correct position of the part top-to-bottom. Make alignment marks with tape

or non-staining grease pencil on both the glass and the vehicle body.

3. **CAUTION: Care must be taken to avoid scratching the pinch weld.**

   Trim the remaining urethane adhesive on the pinch weld using only the full-cut method. In this method, most of the existing urethane is removed leaving a level bead around the entire pinch weld.



4. Using a wool applicator, apply the Urethane Metal Primer Essex U-413 meeting Ford specification WSB-M234-C to any exposed metal on the pinch weld. Allow 6 to 10 minutes to dry.

5. If reinstalling the original back window glass, remove the urethane adhesive from the back window glass.

6. **NOTE:** If a new back window glass is to be installed, attach the new moulding to the edge of the glass starting at the top center then work down the sides and around the corners.

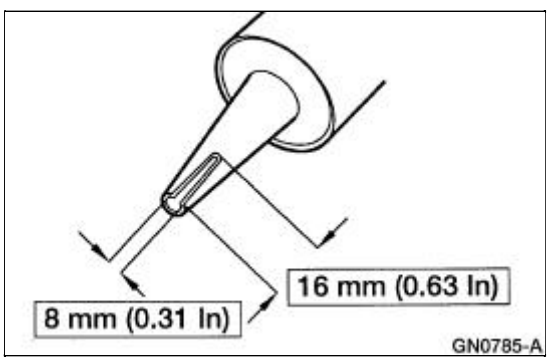
   If installing a new back window glass, clean the inside of the glass surface with an alcohol-free cleaner to make sure the ceramic-coated area is clean.

7. **CAUTION: Wipe off the urethane glass prep immediately after each application because it flash dries. Apply deliberate strokes, making sure not to overlap the applied area.**

   If installing a new back window glass, apply Urethane Glass Prep Essex U-401 meeting Ford specification WSB-M2G314-B twice around the class surface to be prepped.

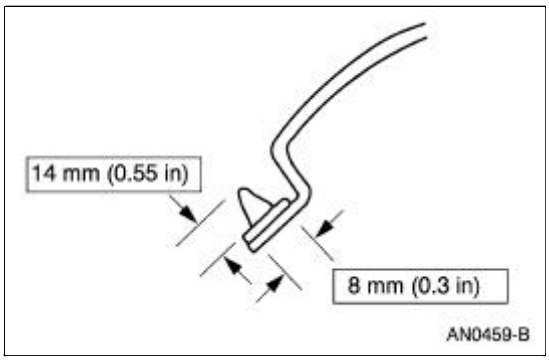
8. If installing a new back window glass, apply Urethane Glass Primer Essex U-402 meeting Ford specification WSB-M5B280-C to the same area that was in the previous step. Allow five minutes to dry.

9. Cut the applicator tip to specification.



10. **CAUTION: If the vehicle is to be driven within 24 hours of urethane adhesive application, Urethane Adhesive Essex U-216 meeting Ford specification WSB-M2G316-B must be used due to its one hour cure time.**

    Apply a bead of Urethane Adhesive Essex 400-HV or Essex U-216 meeting Ford specification WSB-M2G316-B to the pinch weld.



11. **CAUTION: Open a window to prevent the back window glass from being pushed out by air pressure when the door is closed.**

    Using the alignment marks install the back window glass.

12. After the glass is set, check for water leaks and add urethane adhesive where needed.

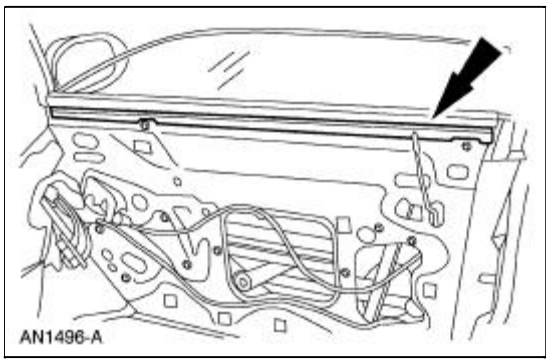
13. Install the headliner.

14. Install the roof side trim moulding. For additional information, refer to Section 501-08 .

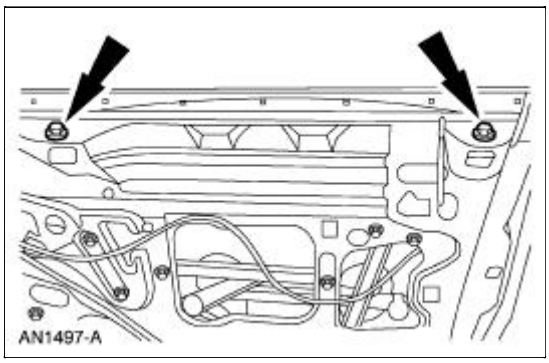
Window Glass —Door

Removal

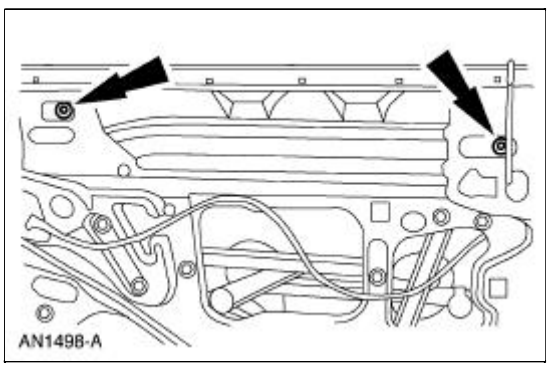
1. Remove the door trim panel. For additional information, refer to Section 501-05 .
2. Remove the interior weatherstrip.



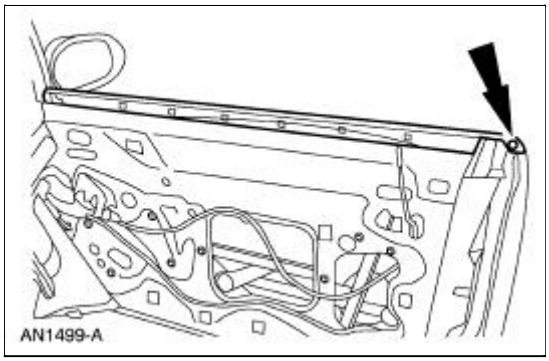
3. Remove the bolts and the stabilizers.



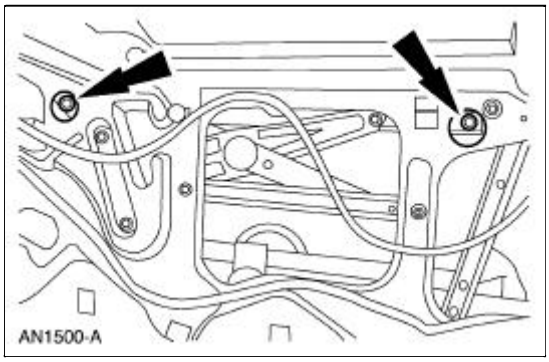
4. Remove the bolts and the upstop brackets.



5. Remove the rivet and the exterior weatherstrip.



6. Remove the rivets.



7. Tip the front of the glass down to clear the door filler and remove the door window glass.

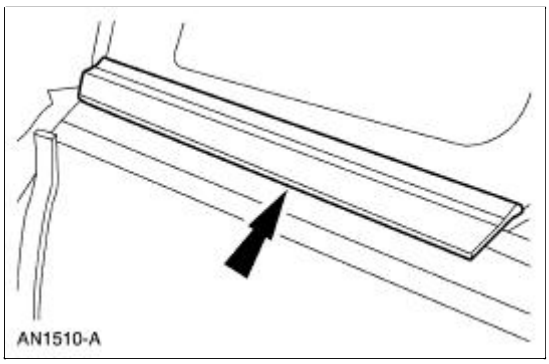
Installation

1. To install, reverse the removal procedure.

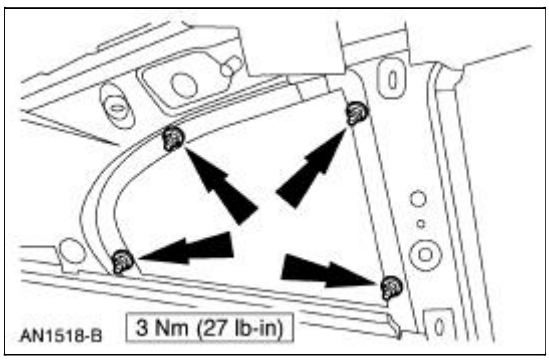
Window Glass —Quarter

Removal

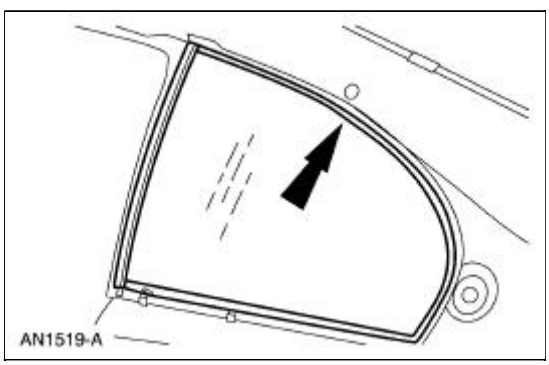
1. Remove the quarter trim panel. For additional information, refer to Section 501-05 .
2. Remove the roof side trim moulding. For additional information, refer to Section 501-08 .
3. Remove the exterior quarter glass weatherstrip.



4. Remove the nuts.



5. Remove the quarter window glass.



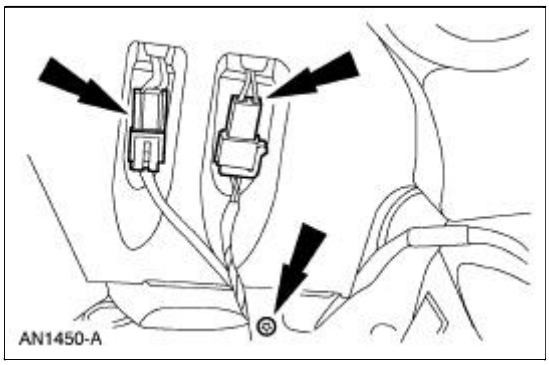
Installation

1. To install, reverse the removal procedure.

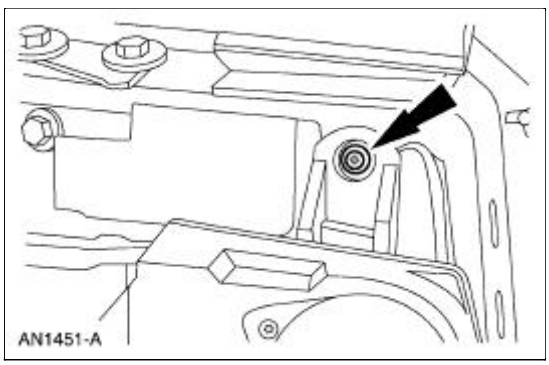
Window Glass —Quarter, Convertible

Removal

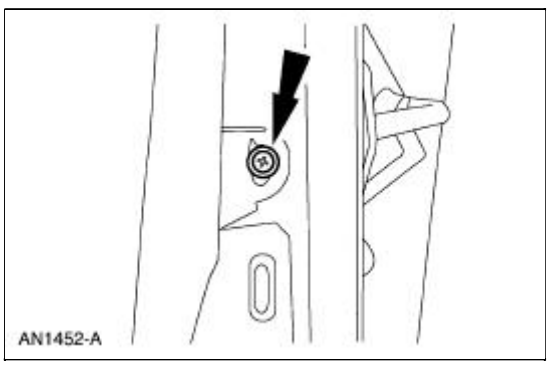
1. Remove the quarter trim panel. For additional information, refer to Section 501-05 .
2. Disconnect the connectors and remove the screw.



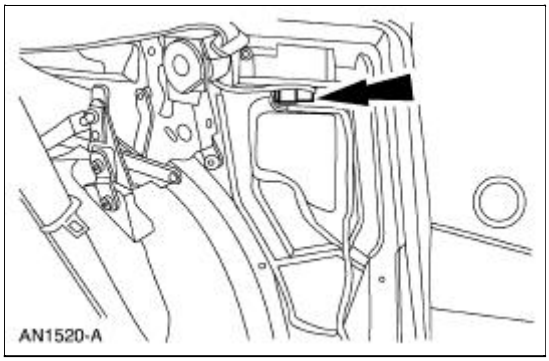
3. Remove the screw.



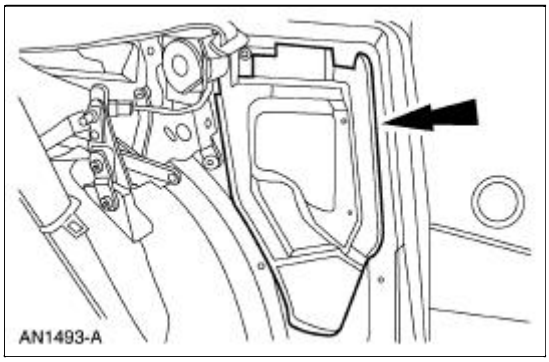
4. Remove the screw and the speaker.



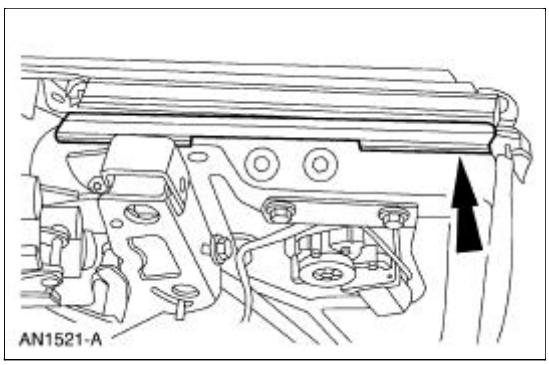
5. Disconnect the electrical connector.



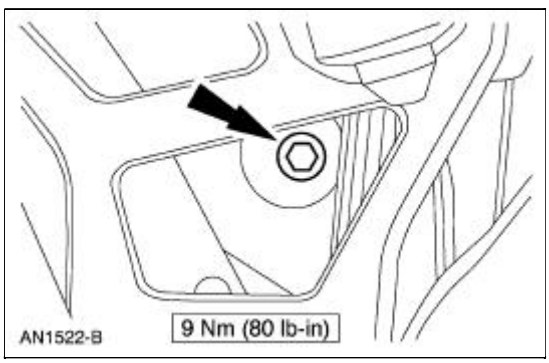
6. Remove the watershield.



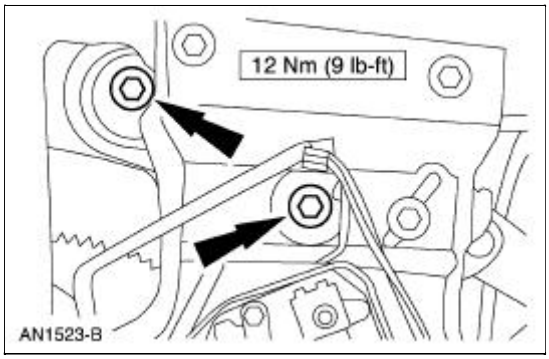
7. Remove the interior weatherstrip.



8. Remove the bolt.



9. Remove the bolts and the glass.



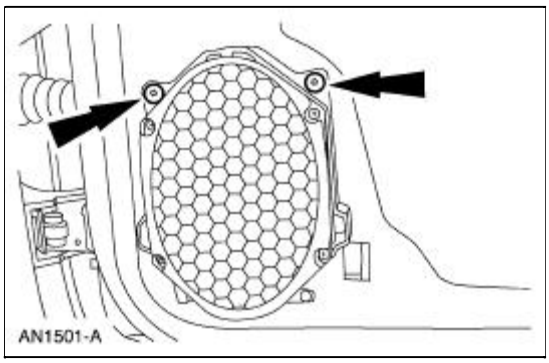
Installation

1. To install, reverse the removal procedure.

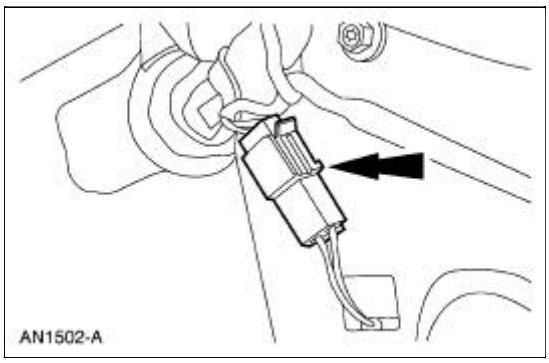
Motor —Window Regulator

Removal

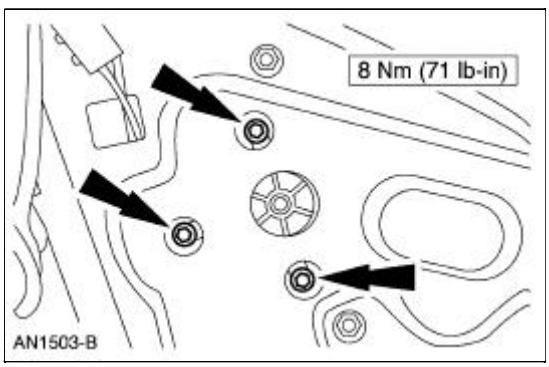
1. Remove the door trim panel. For additional information, refer to Section 501-05 .
2. Remove the screws and the speaker.



3. Disconnect the electrical connector.



4. Remove the screws and the window regulator motor.



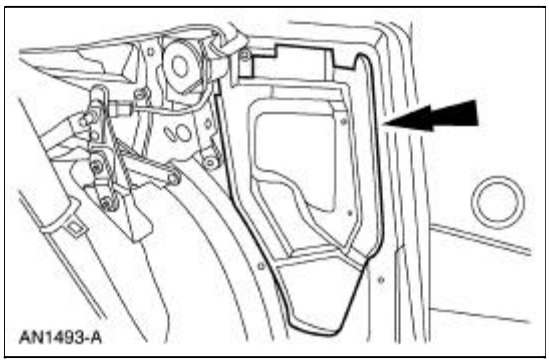
Installation

1. To install, reverse the removal procedure.

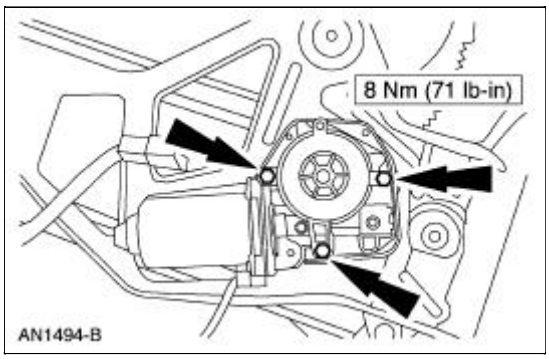
Motor —Window Regulator, Quarter

Removal

1. Remove the quarter trim panel. For additional information, refer to Section 501-05 .
2. Remove the watershield.



3. Remove the quarter glass window regulator motor.



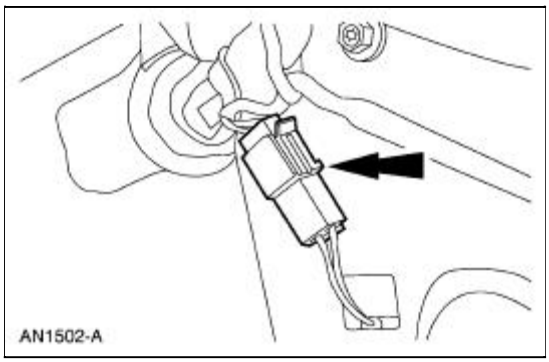
Installation

1. To install, reverse the removal procedure.

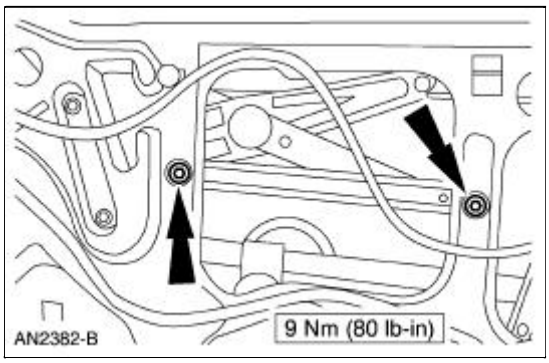
Window Regulator —Power

Removal

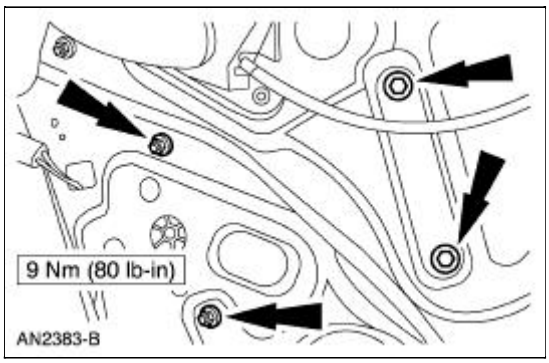
1. Remove the door window glass. For additional information, refer to Window Glass—Door in this section.
2. Disconnect the electrical connector.



3. Remove the channel.



4. Remove the regulator.



Installation

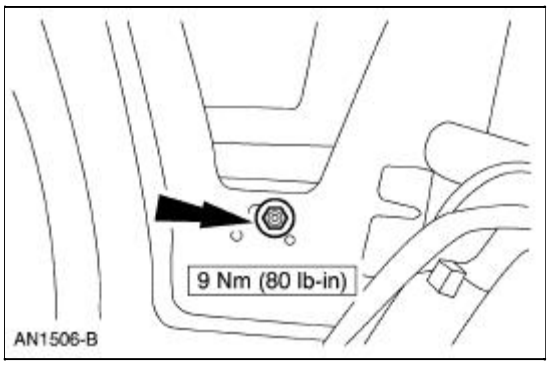
1. To install, reverse the removal procedure.

Window Regulator —Quarter

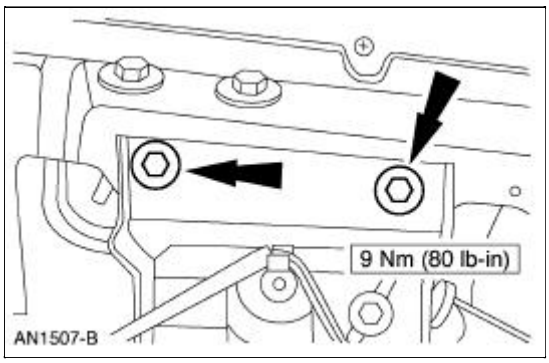
Removal

1. Remove the quarter window glass. For additional information, refer to Window Glass—Quarter in this section.

2. Remove the nut.



3. Remove the screws and the rear quarter window regulator.



Installation

1. To install, reverse the removal procedure.

Windshield Glass

Special Tool(s)

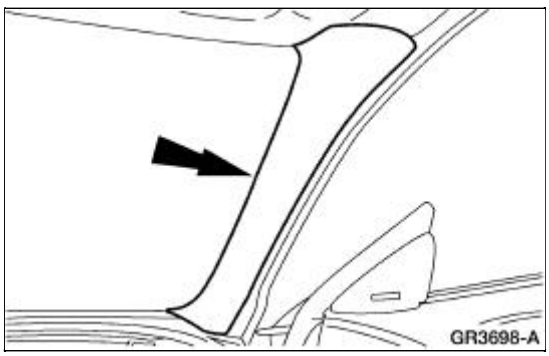
 ST1109-A	Rotunda Pneumatic Knife with Offset Blade 107-R1511 or equivalent
 ST2085-A	The Pumper 164-R2459 or equivalent
 ST1320-A	Rotunda Interior Auto Glass Cut-Out Knife Kit 164-R2450 or equivalent

Removal

All vehicles

WARNING: To prevent glass splinters from entering eyes or cutting hands, wear safety glasses and heavy gloves when cutting glass from the vehicle.

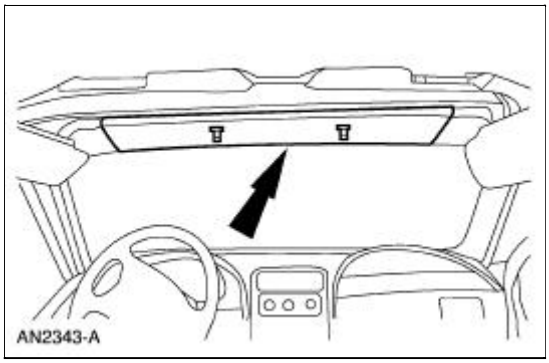
1. Remove the RH and LH windshield side garnish mouldings.
   - If equipped with a convertible top, remove the pin-type retainers.



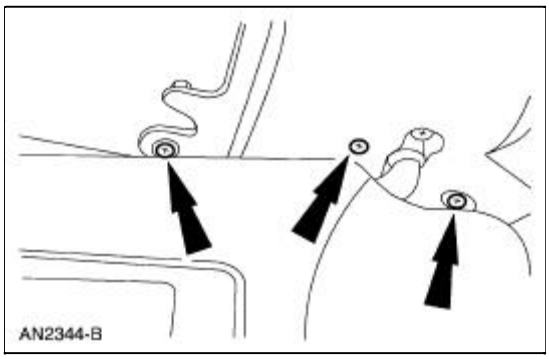
2. Remove the interior rear view mirror.

Convertible

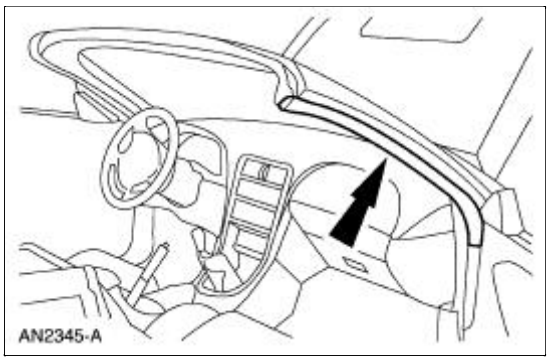
3. Remove the visor trim moulding.



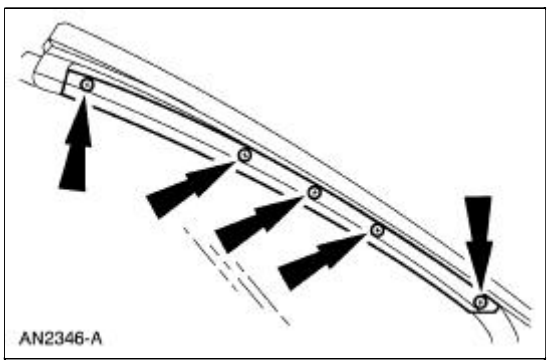
4. Remove the screws and the sun visors.
    - Disconnect the electrical connector(s).



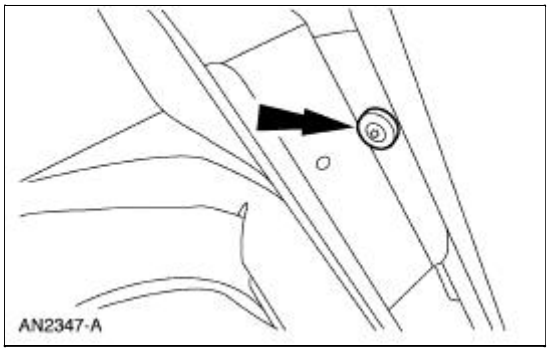
5. Remove the weatherstrips.



6. Remove the screws and the weatherstrip retainers.

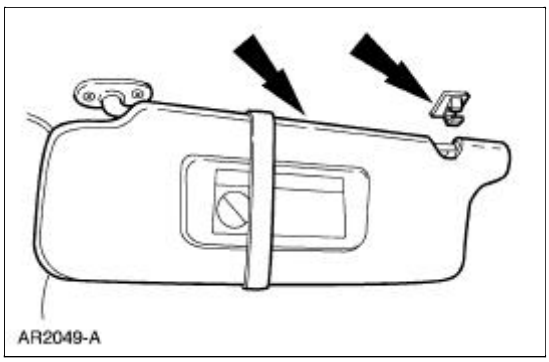


7. Remove the screw and the exterior A-pillar moulding.



Coupe

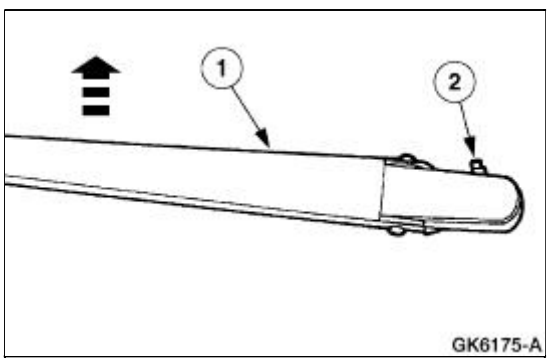
8. Remove the sun visors and clips
   - Remove the screws.
   - Remove the clips.



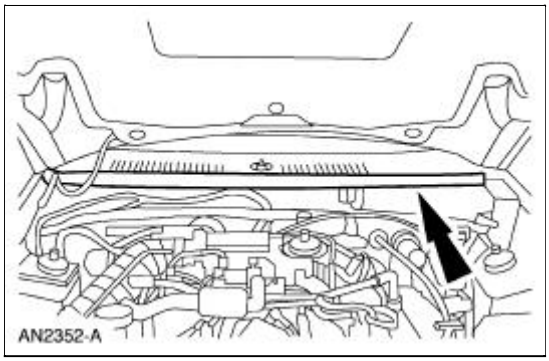
9. Remove the roof side trim moulding. For additional information, refer to Section 501-08 .
10. Lower the front portion of the headliner.

All vehicles

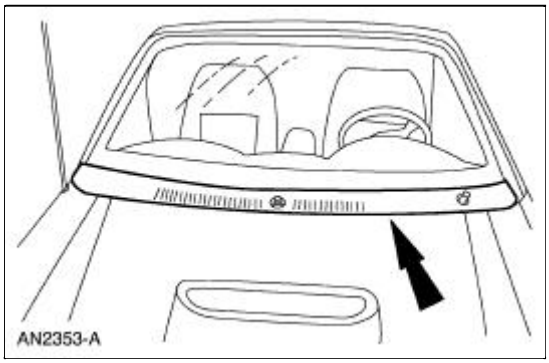
11. Remove the two windshield wiper pivot arms.
    1. Raise up on the pivot arms.
    2. Release the retainer tabs, and release the windshield wiper pivot arms.



12. Remove the cowl grille weatherstrip.



13. Remove the cowl grille.



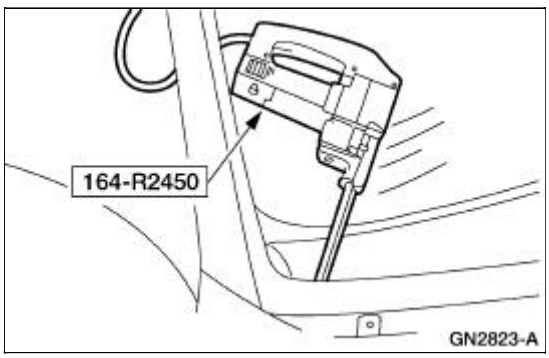
14. Using a soft brush or vacuum, clean any dirt or foreign material from the pinch weld.

15. **CAUTION: Cover the instrument panel to prevent possible damage.**

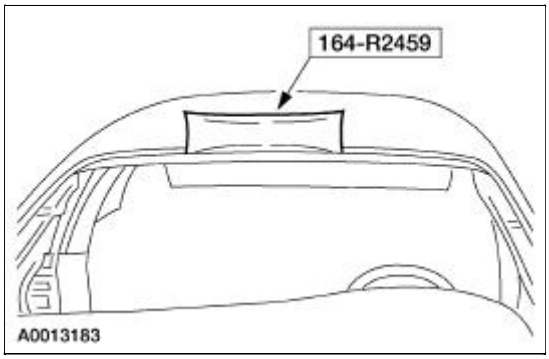
    CAUTION: Care must be taken to prevent scratching the pinch weld.

    NOTE: Lubricate the existing urethane adhesive with water to aid the special tool while cutting.

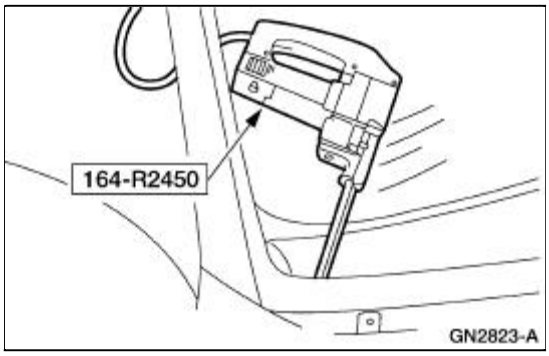
    Using the special tool, starting at the top center of the windshield cut the urethane adhesive from the windshield glass and work down the sides.



16. Using the special tool, distance the windshield glass from the body.



17. Using the special tool cut the urethane adhesive and remove the windshield.



18. Using a soft brush or vacuum, remove any dirt or foreign material from the pinch weld.

Installation

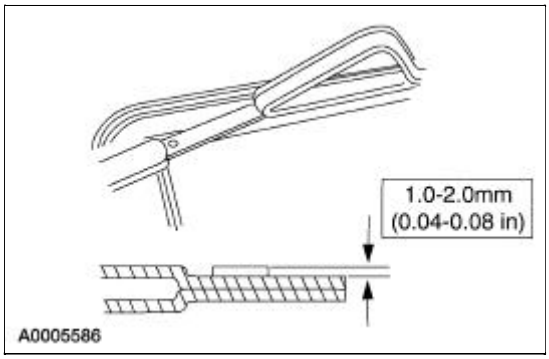
All vehicles

CAUTION: After installing the urethane installed windshield, the vehicle should not be driven until the urethane adhesive has cured. The curing time at temperatures above 13°C (55° F) and relative humidity above 50% is 12-24 hours (Refer to ESSEX drive away chart for cure times as temperatures and humidity vary). Inadequate curing of the urethane adhesive may adversely affect the strength of the urethane adhesive bond.

1. Dry-fit the windshield glass by centering it side-to-side and by adjusting the setting blocks (if equipped) to get the correct position of the part top-to-bottom. Make alignment marks with tape or non-staining grease pencil on both the glass and the vehicle body.

2. **CAUTION: Care must be taken to avoid scratching the pinch weld.**

   Trim the remaining urethane on the pinch weld using only the full-cut method. in this method, most of the existing urethane is removed leaving a level bead around the entire pinch weld.



3. Using a wool applicator, apply the Urethane Metal Primer Essex U-413 meeting Ford specification WSB-M2G234-C to any exposed metal on the pinch weld. Allow 6 to 10 minutes to dry.

4. If reinstalling the original windshield glass, remove the excess urethane adhesive from the windshield glass.

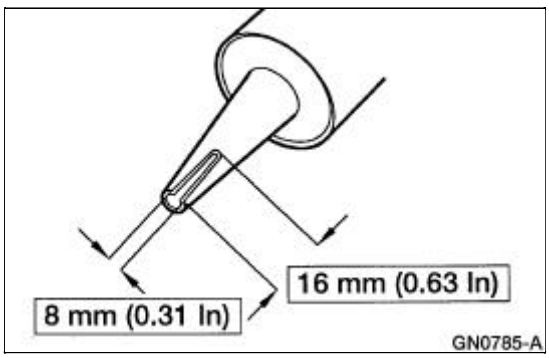
5. If installing a new windshield glass, clean the inside of the glass surface with an alcohol-free cleaner to make sure the ceramic-coated area is clean.

6. **CAUTION: Wipe off the urethane glass prep immediately after each application because it flash dries. Apply deliberate strokes, making sure not to overlap the applied area.**

   If installing a new windshield glass, apply Urethane Glass Prep Essex U-401 meeting Ford specification WSB-M2G314-B twice around the class surface to be prepped.

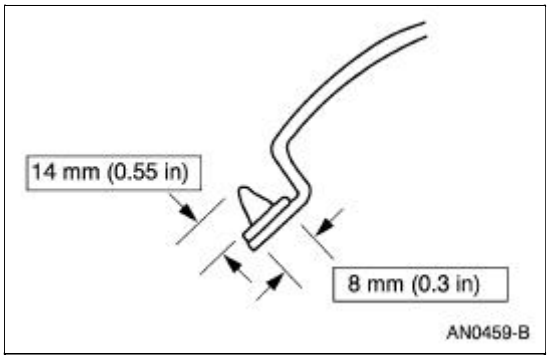
7. If installing a new windshield glass, apply Urethane Glass Primer Essex U-402 meeting Ford specification WSB-M5B280-C to the same area that was in the previous step. Allow five minutes to dry.

8. Cut the applicator tip to specification.



9. **CAUTION: If the vehicle is to be driven within 24 hours of urethane adhesive application, Urethane Adhesive Essex U-216 meeting Ford specification WSB-M2G316-B must be used due to its one hour cure time.**

   Apply a bead of Urethane Adhesive Essex 400-HV or Essex U-216 meeting Ford specification WSB-M2G316-B to the pinch weld.

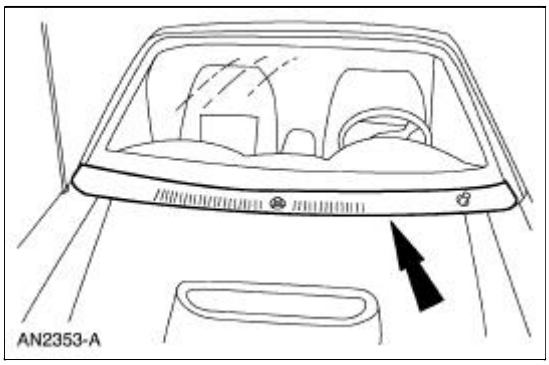


10. **CAUTION: Open a window to prevent the windshield glass from being pushed out by air pressure when a door is closed.**

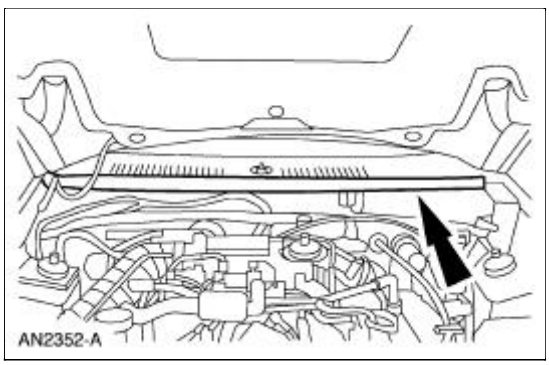
    Using the alignment marks install the windshield glass.

11. After the glass is set, check for water leaks and add urethane adhesive where needed.

12. Install the cowl grille.



13. Install the cowl grille weatherstrip.

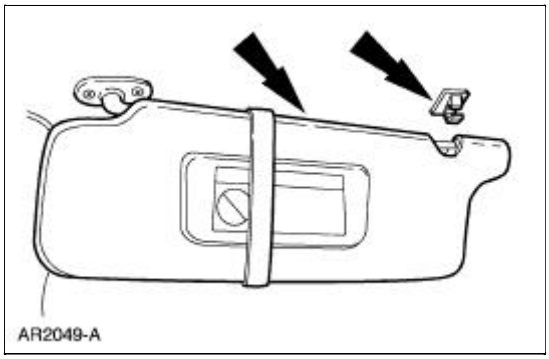


14. Install the two windshield wiper pivot arms.
    - Position the arms.
    - Install the windshield wiper pivot arms.

15. Install the headliner.

Coupe

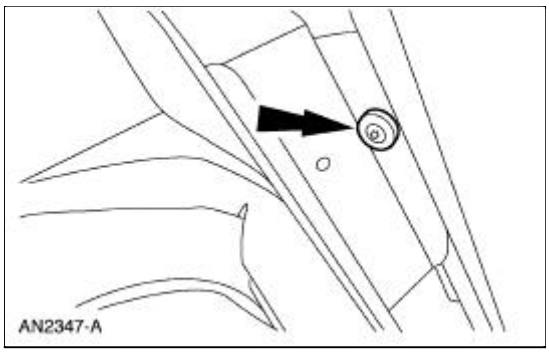
16. Install the sun visors and clips.



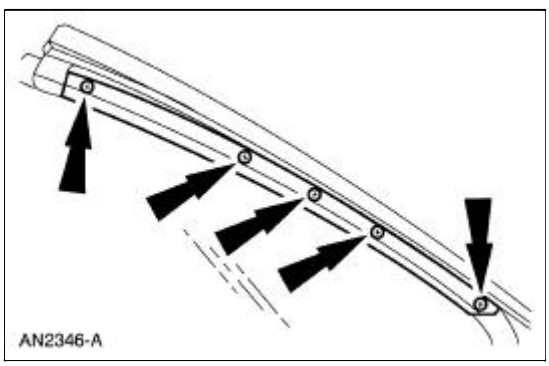
17. Install the roof side trim moulding. For additional information, refer to Section 501-08 .

Convertible

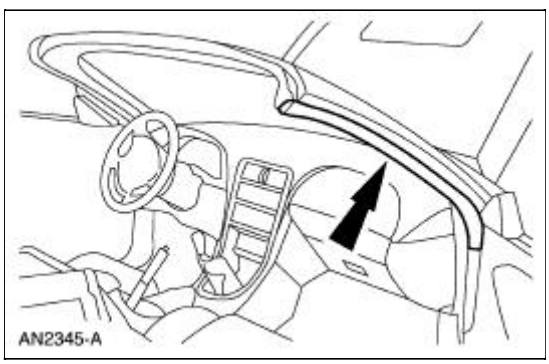
18. Install the exterior A-pillar moulding and screw.



19. Install the weatherstrip retainers.

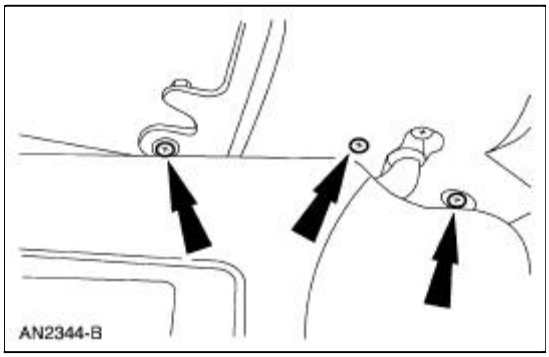


20. Install the weatherstrips.

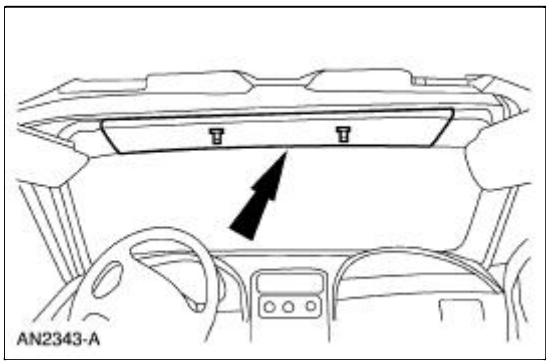


21. Position the sun visors and install the screws.

- Connect the electrical connector(s).

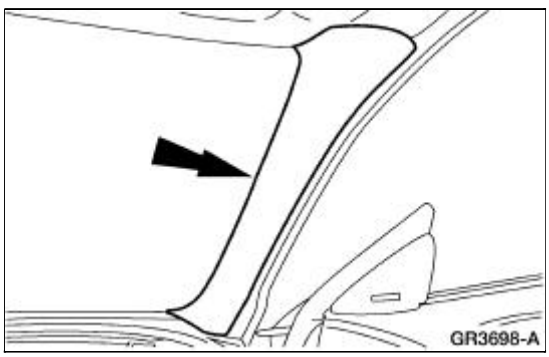


22. Install the visor trim moulding.



All vehicles

23. Install the RH and LH windshield side garnish moulding.
    - If equipped with a convertible top, install the pin-type retainers.

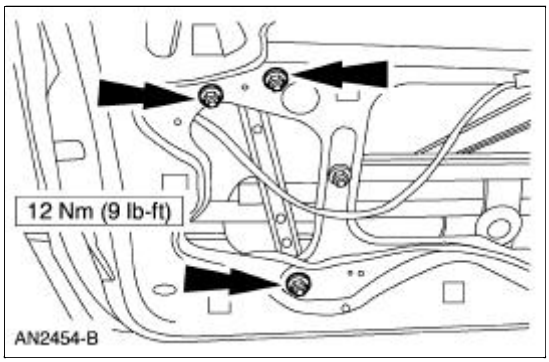


24. Install the interior rear view mirror.

Door Glass Run Retainer

Removal

1. Remove the door trim panel. For additional information, refer to Section 501-05 .
2. Remove the watershield.
3. Position the door window glass in the full up position.
4. Remove the nuts and the door glass run.



Installation

1. To install, reverse the removal procedure.

Torque Specifications

Description	Nm	lb-ft	lb-in
Bulkhead wiring harness electrical connector bolt	5	—	44
Floor console screws	2	—	18
Instrument panel support bolts	9	—	80
Instrument panel support nut	48	35	—
Intermediate shaft pinch bolt	47	35	—
Instrument panel reinforcement screws	9	—	80
Instrument panel steering column cover screws	9	—	80

Instrument Panel

The instrument panel consists of the following components:

- instrument cluster
- instrument panel finish panels
- audio unit
- A/C controls
- glove compartment door
- passenger air bag module
- glove compartment
- instrument panel steering column cover
- instrument panel reinforcement
- instrument panel defroster grille

Console —Floor

The floor console consists of the following components:

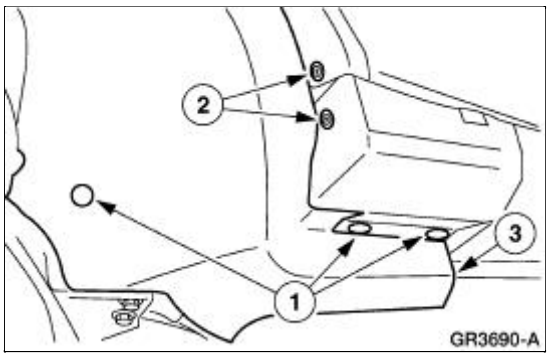
- console glove compartment
- console glove compartment door
- beverage holder
- cigar lighter knob and element
- power point
- glove compartment hinge
- console finish panel
- coin holder
- convertible top control switch (if equipped)

Instrument Panel

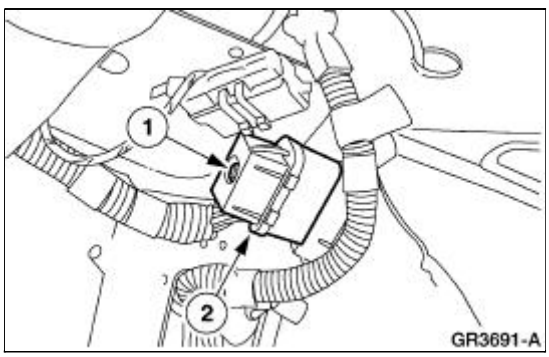
Removal

CAUTION: Electronic modules are sensitive to static electrical charges. If exposed to these charges, damage may result.

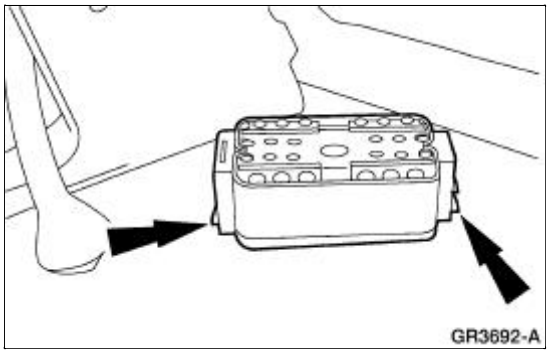
1. Remove the driver air bag module. For additional information, refer to Section 501-20B .
2. Remove the passenger air bag module. For additional information, refer to Section 501-20B .
3. Remove the LH front wheel and tire assembly. For additional information, refer to Section 204-04 .
4. Position the LH fender splash shield away from the dash panel.
    1. Remove the pin-type retainers.
    2. Remove the screws.
    3. Position the LH fender splash shield away from the dash panel.



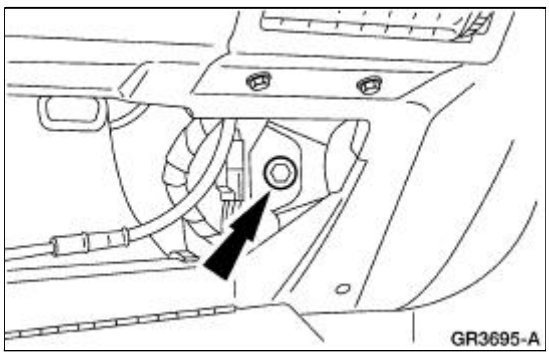
5. Disconnect the bulkhead electrical connector from inside the fender opening.
    1. Loosen the bolt.
    2. Disconnect the bulkhead electrical connector.



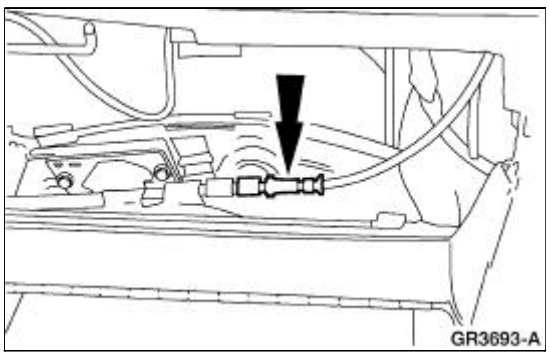
6. Release the bulkhead electrical connector from the dash panel.



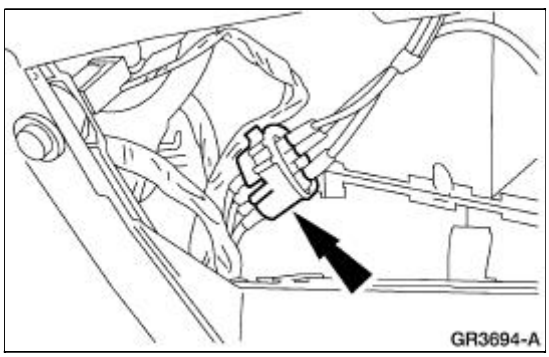
7. Install the LH front wheel and tire assembly. For additional information, refer to Section 204-04 .
8. Remove the floor console. For additional information, refer to Floor Console in this section.
9. Remove the upper RH instrument panel support bolt.



10. Disconnect the antenna in-line connector.

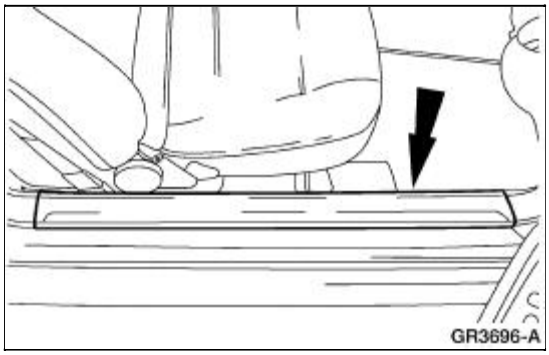


11. Disconnect the climate control vacuum harness connector.

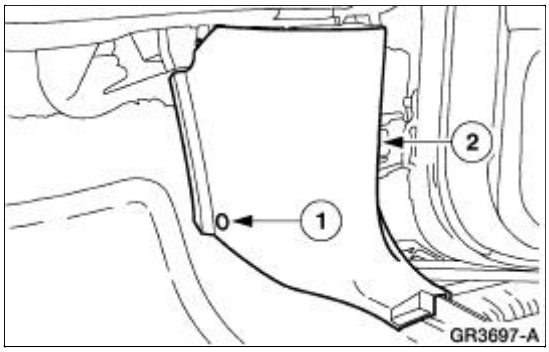


12. Close the glove compartment.

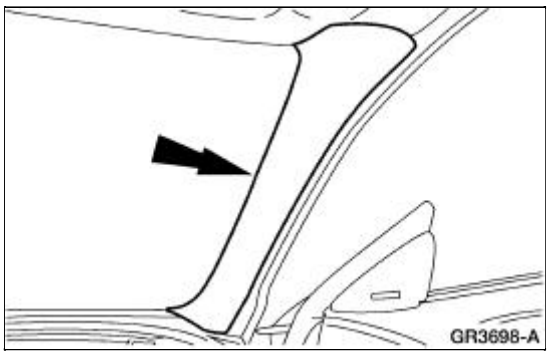
13. Remove the LH and RH scuff plates.



14. Remove the LH and RH A-pillar lower trim panels.
    1. Remove the pin-type retainers.
    2. Remove the A-pillar lower trim panels.

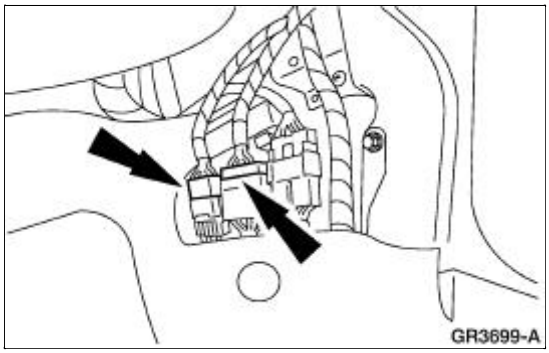


15. Remove the LH and RH windshield side garnish mouldings.
    - If equipped with a convertible top, remove the pin-type retainers.

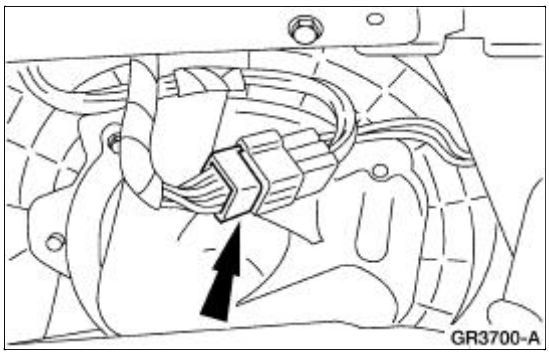


16. Position the LH and RH door weatherstrips aside.

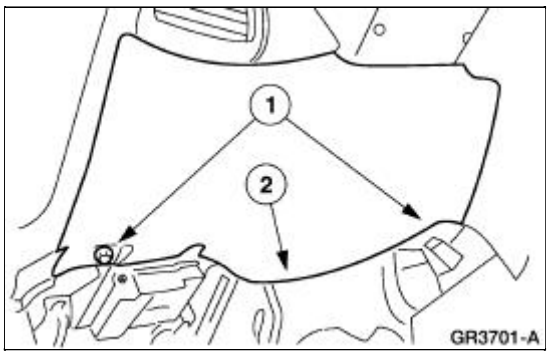
17. Disconnect the RH main wiring harness electrical connectors.



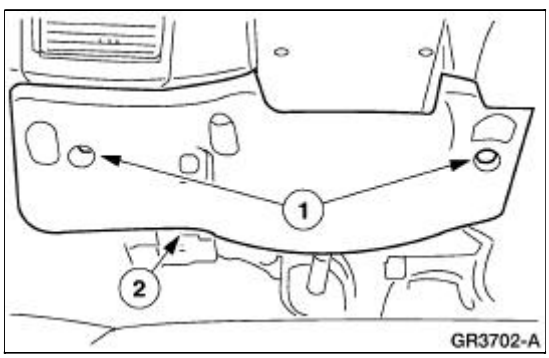
18. Disconnect the climate control wiring harness connector.



19. Remove the instrument panel steering column cover.
    1. Remove the screws.
    2. Remove the instrument panel steering column cover.

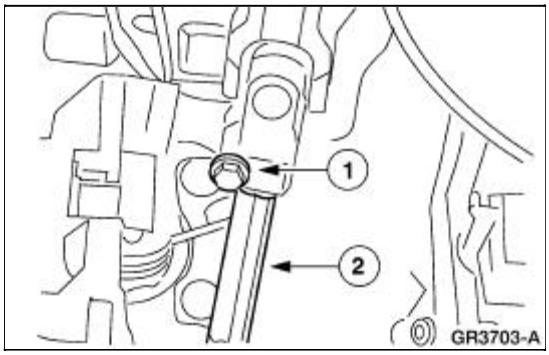


20. Remove the instrument panel reinforcement.
    1. Remove the screws.
    2. Remove the instrument panel reinforcement.



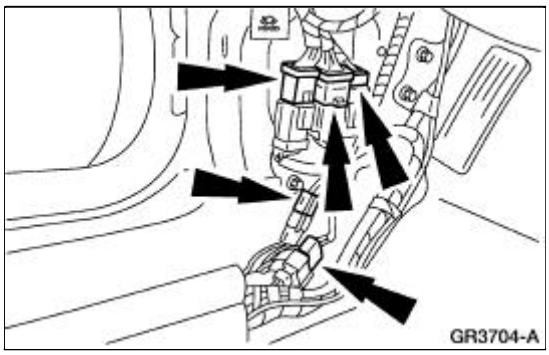
21. Separate the intermediate shaft from the steering column shaft.
    1. Remove the pinch bolt.

2. Separate the intermediate shaft from the steering column shaft.

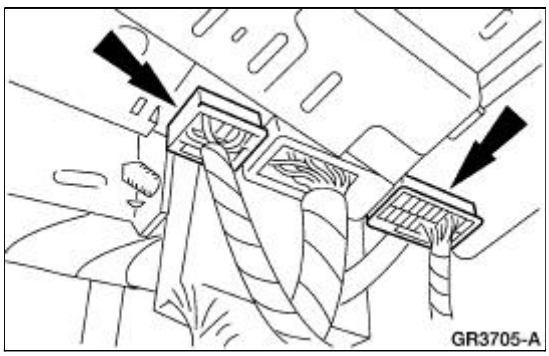


22. **NOTE:** The corner of the carpet may have to be pulled back slightly to carry out this step.

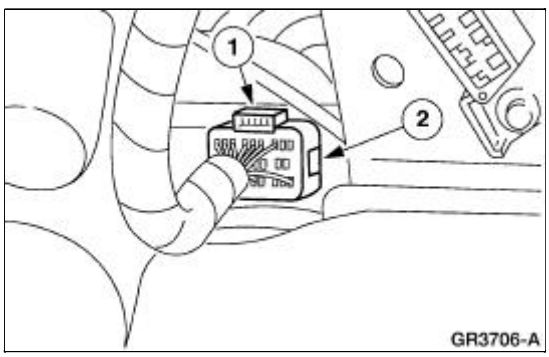
    Disconnect the LH main wiring harness electrical connectors.



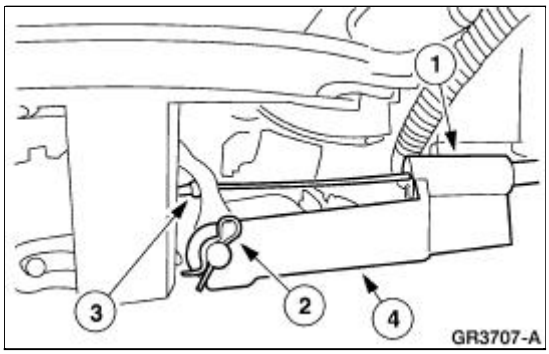
23. Disconnect the generic electronic module (GEM) electrical connectors.



24. Disconnect the electronic crash sensor (ECS) module electrical connector.
    1. Release the locking tab.
    2. Disconnect the ECS module electrical connector.

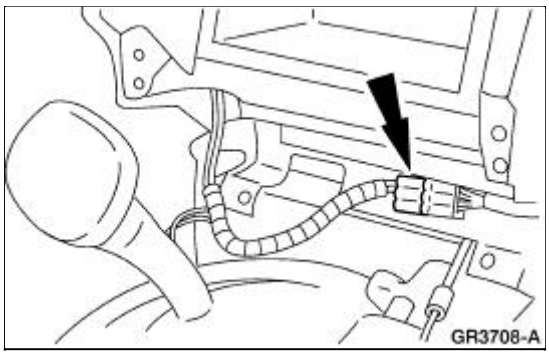


25. If equipped, disconnect the shift interlock assembly from the selector lever.
    1. Remove the screw.
    2. Remove the R-clip.
    3. Disconnect the shift interlock cable.
    4. Disconnect the shift interlock assembly from the selector lever.



26. Remove the audio unit. For additional information, refer to Section 415-01 .

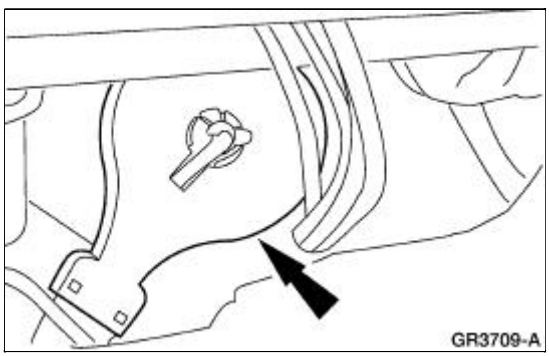
27. If equipped, disconnect the shifter assembly electrical connector.



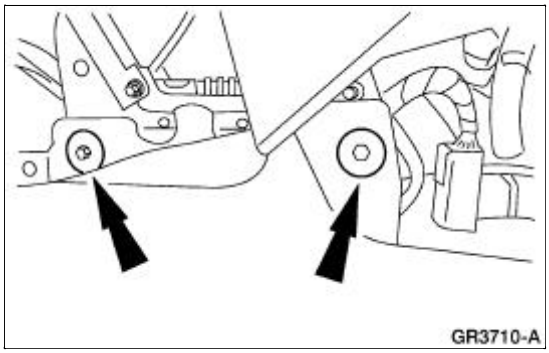
28. **NOTE:** This step is being carried out through the audio unit opening.

    NOTE: Rotate the temperature control switch to the cool position.

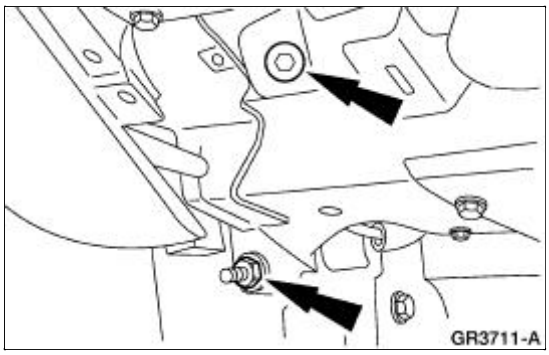
    Release the temperature control cable from the blend door.



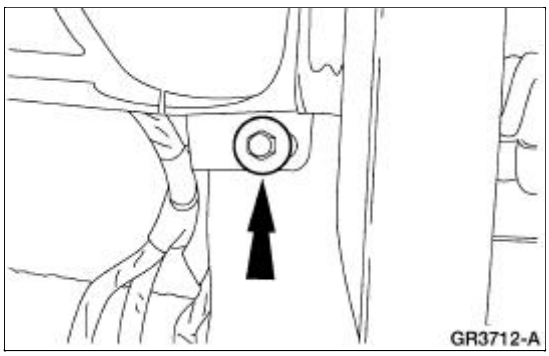
29. Remove the four center instrument panel support bolts.



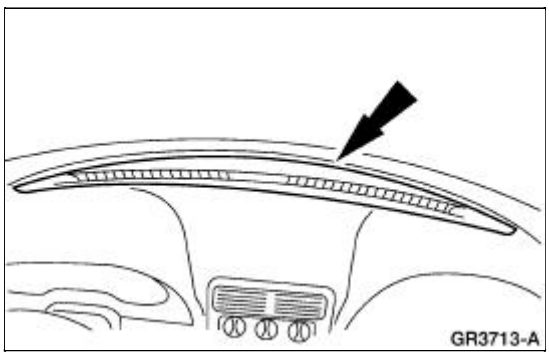
30. Remove the LH instrument panel support bolt and nut.



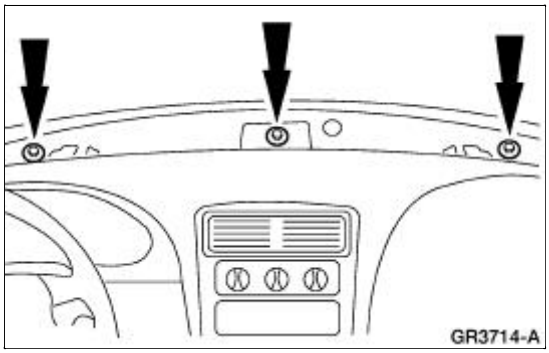
31. Remove the RH instrument panel support bolt.



32. Remove the instrument panel defroster grille.



33. Remove upper instrument panel support bolts.



34. **NOTE:** Two technicians are necessary to carry out this step.

    Remove the instrument panel.

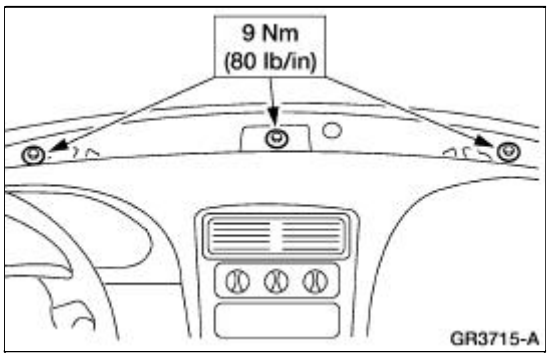
Installation

CAUTION: Electronic modules are sensitive to static electrical charges. If exposed to these charges, damage may result.

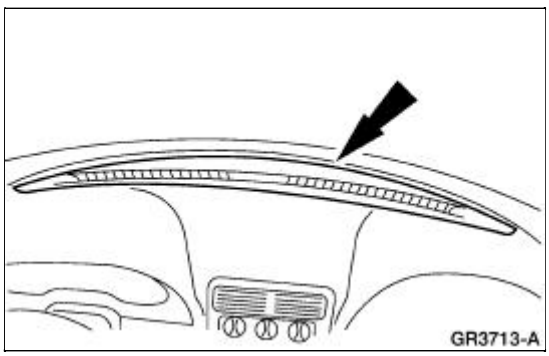
1. **NOTE:** Two technicians are necessary to carry out this step.

   Install the instrument panel.

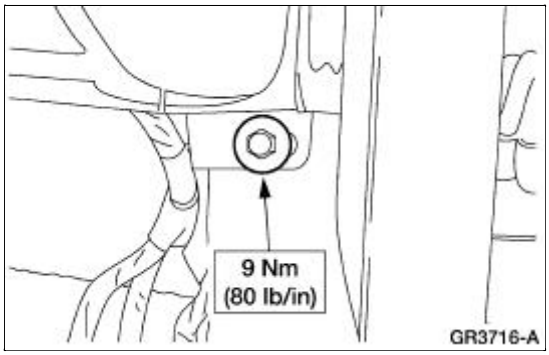
2. Install the upper instrument panel support bolts.



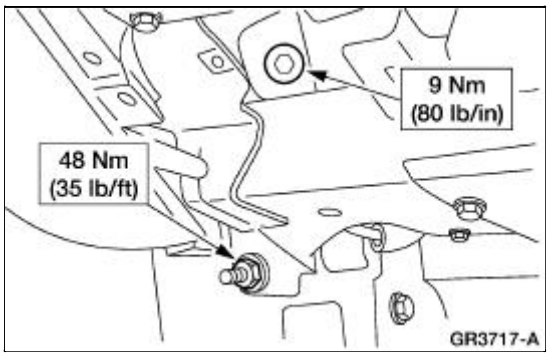
3. Install the instrument panel defroster grille.



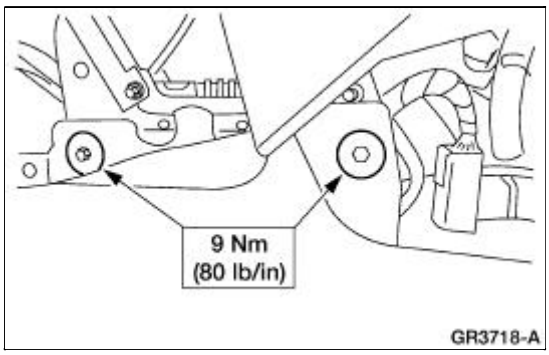
4. Install the RH instrument panel support bolt.



5. Install the LH instrument panel support bolt and nut.

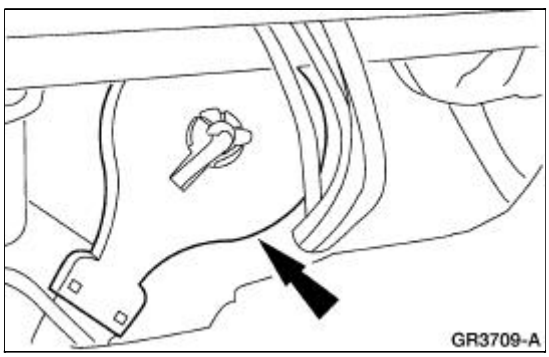


6. Install the four center instrument panel support bolts.

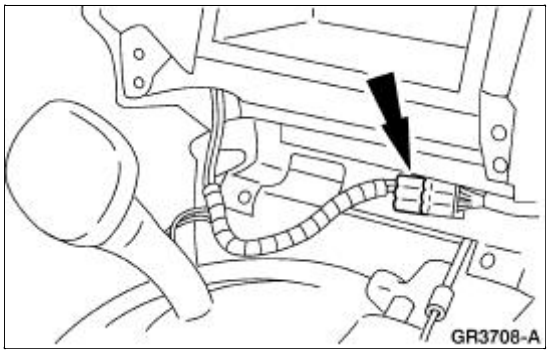


7. **NOTE:** This step is being carried out through the audio unit opening.

   Install the temperature control cable to the blend door.

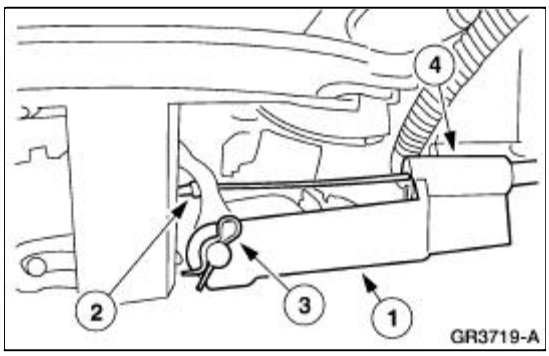


8. If equipped, connect the shifter assembly electrical connector.

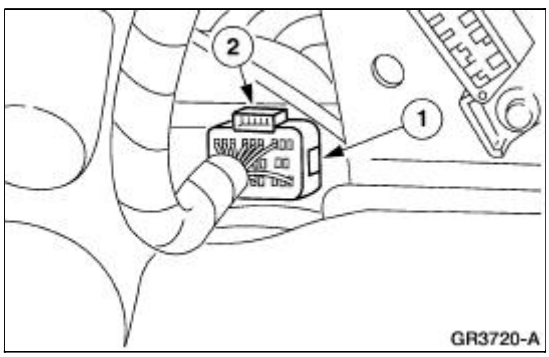


9. Install the audio unit. For additional information, refer to Section 415-01 .

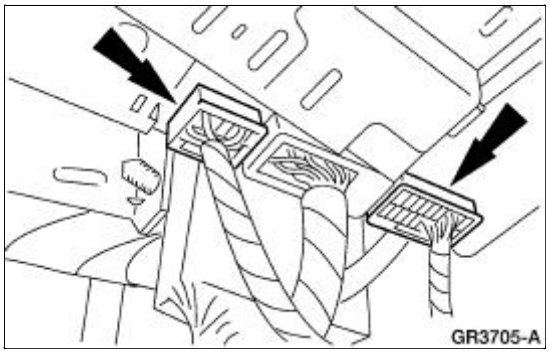
10. If equipped, connect the shift interlock assembly to the selector lever.
    1. Position the shift interlock assembly.
    2. Connect the shift interlock cable.
    3. Install the R-clip.
    4. Install the screw.



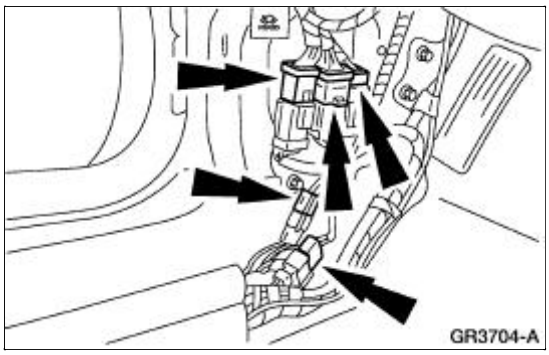
11. Connect the ECS module electrical connector.
    1. Connect the ECS module electrical connector.
    2. Engage the locking tab.



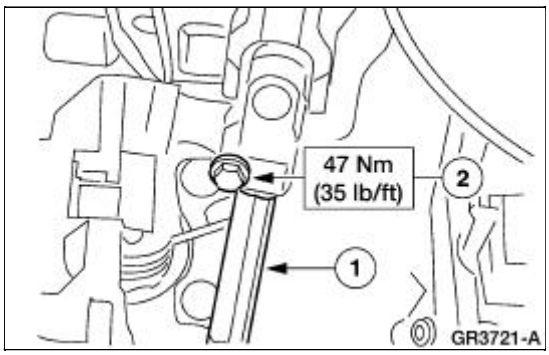
12. Connect the GEM electrical connectors.



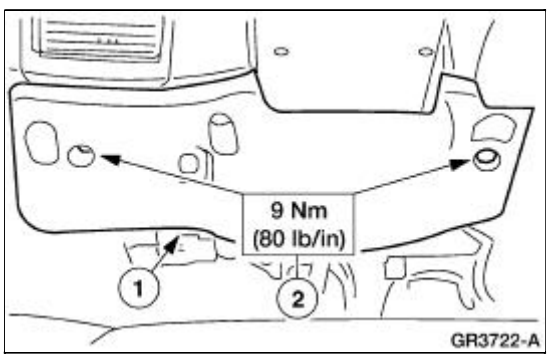
13. Connect the LH main wiring harness electrical connectors.



14. Connect the intermediate shaft to the steering column.
    1. Connect the intermediate shaft to the steering column.
    2. Install the pinch bolt.

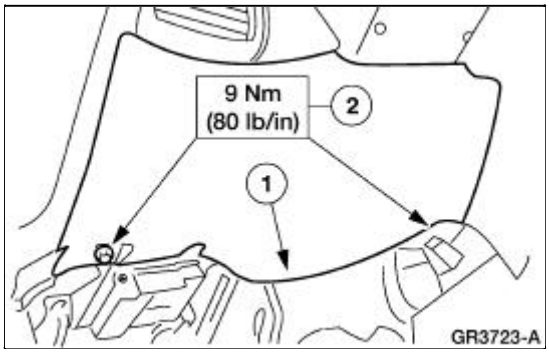


15. Install the instrument panel reinforcement.
    1. Position the instrument panel reinforcement.
    2. Install the screws.

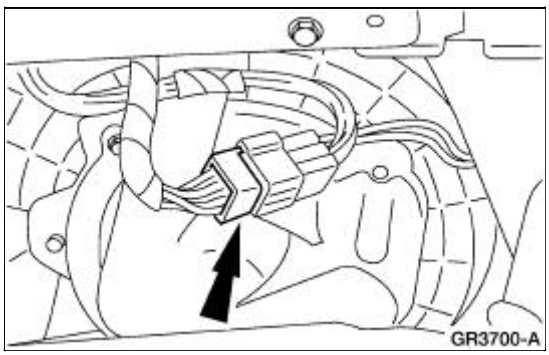


16. Install the instrument panel steering column cover.
    1. Position the instrument panel steering column cover.

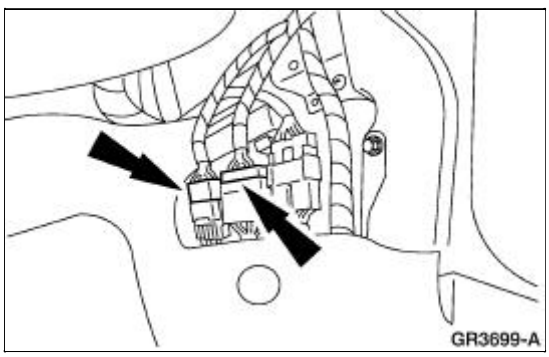
2. Install the screws.



17. Connect climate control wiring harness connector.

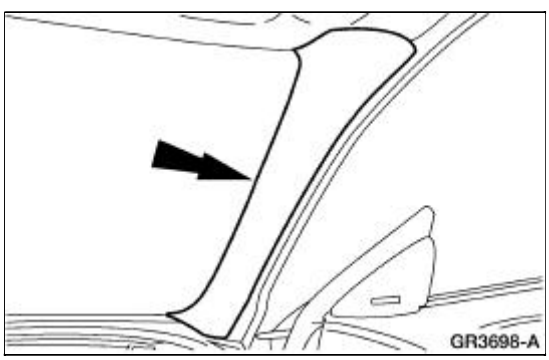


18. Connect the RH main harness electrical connectors.

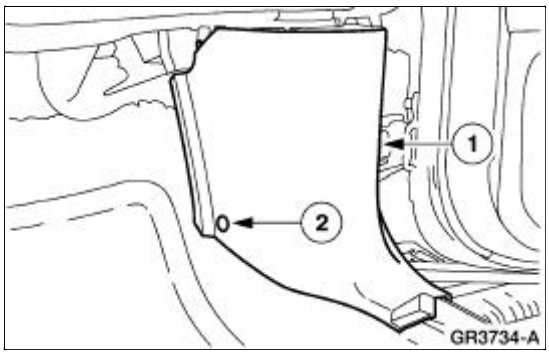


19. Install the LH and RH door weatherstrips.

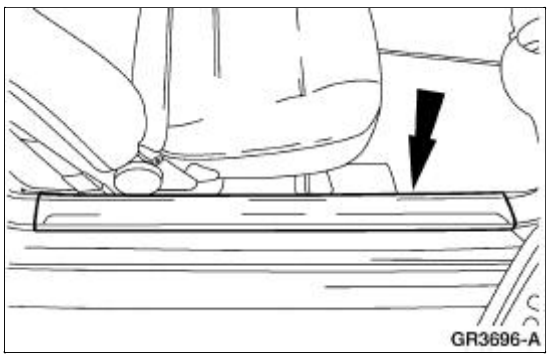
20. Install the LH and RH windshield side garnish mouldings.
    - If equipped with a convertible top, install the pin-type retainers.



21. Install the LH and RH A-pillar lower trim panels.
    1. Position the LH and RH A-pillar lower trim panels.
    2. Install the pin-type retainers.

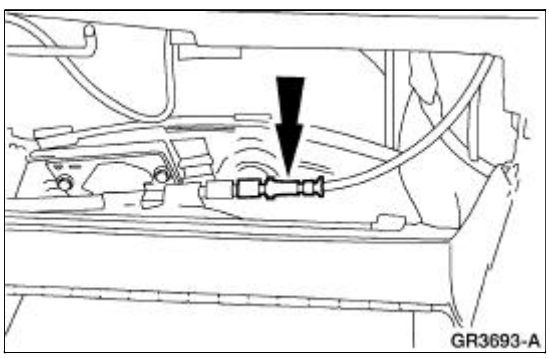


22. Install the LH and RH scuff plates.

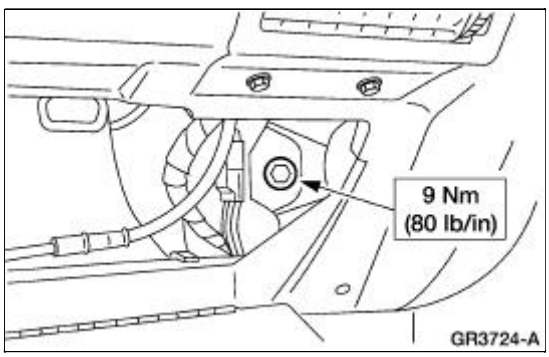


23. Open the glove compartment.

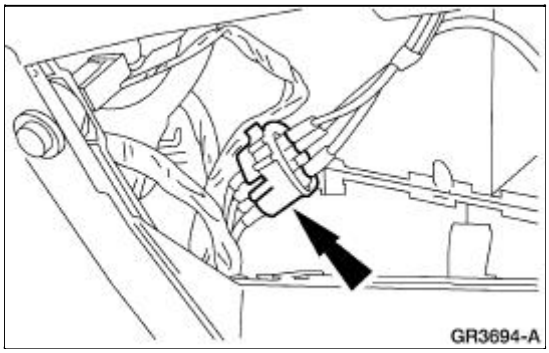
24. Connect the antenna in-line connector.



25. Install the upper RH instrument panel support bolt.



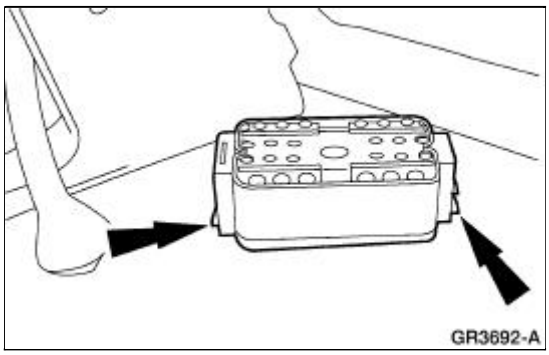
26. Connect the climate control vacuum harness connector.



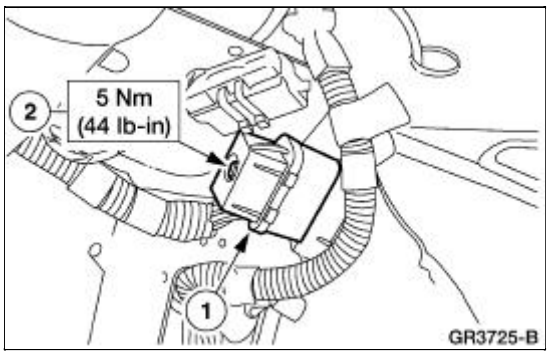
27. Install the floor console. For additional information, refer to Floor Console in this section.

28. Remove the LH front wheel and tire assembly. For additional information, refer to Section 204-04 .

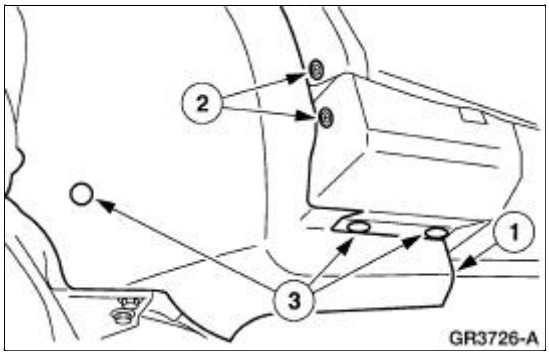
29. Insert the bulkhead electrical connector into the dash panel.



30. Connect the bulkhead electrical connector.
    1. Connect the bulkhead electrical connector.
    2. Tighten the bolt.



31. Install the LH front splash shield.
    1. Position the LH front splash shield.
    2. Install the screws.
    3. Install the pin-type retainers.



32. Install the LH front wheel and tire assembly. For additional information, refer to Section 204-04 .
33. Install the passenger air bag module. For additional information, refer to Section 501-20B .
34. Install the driver air bag module. For additional information, refer to Section 501-20B .

Instrument Panel —Center Finish Panel

Removal and Installation

All vehicles

1. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .

Vehicles with automatic transmission

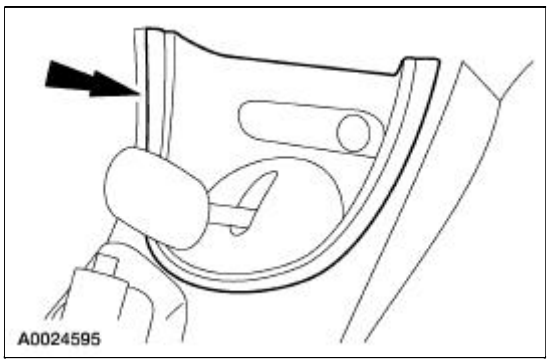
2. Place the selector lever in the 1 position.

Vehicles with manual transmission

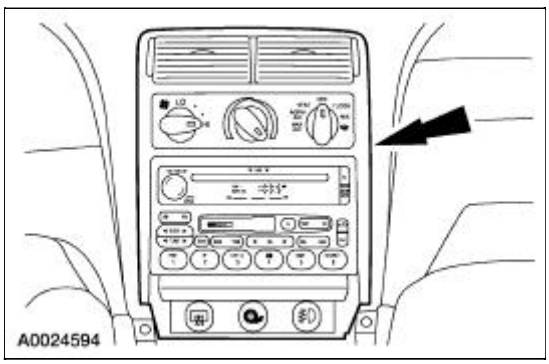
3. Remove the gearshift lever handle.

All vehicles

4. Remove the floor console finish panel.
   - Disconnect the electrical connector.



5. Remove the instrument panel center finish panel.
   - Disconnect the electrical connector.



6. To install, reverse the removal procedure.

Floor Console

Removal and Installation

All vehicles

1. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .
2. Apply the parking brake.

Vehicles with automatic transmission

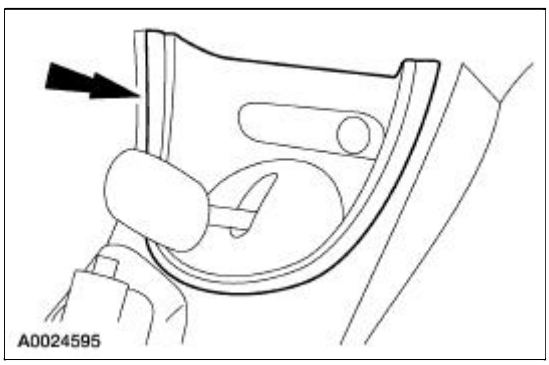
3. Place the selector lever in the 1 position.

Vehicles with manual transmission

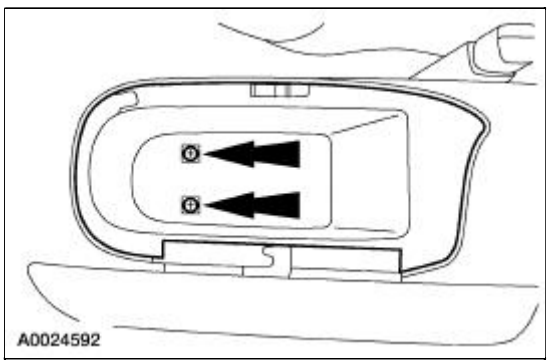
4. Remove the gearshift lever handle.

All vehicles

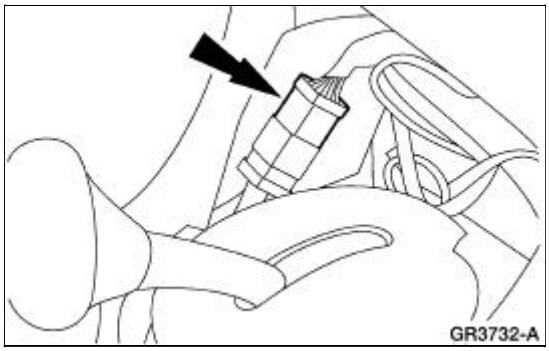
5. Remove the floor console finish panel.
   - Disconnect the electrical connector.



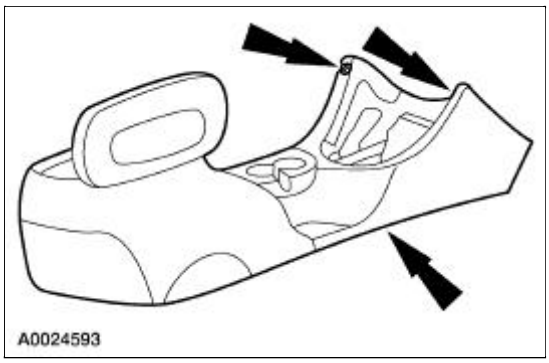
6. Open the floor console glove compartment door.
7. Remove the floor console screws.



8. Disconnect the floor console electrical connector.



9. Remove the screws and the floor console.



10. To install, reverse the removal procedure.

General Specifications

Item	Specification
Lubricants	
Multi-Purpose Grease Spray F5AZ-19G209-AA	ESR-M1C159-A
Penetrating and Lock Lubricant E8AZ-19A501-B	—

Torque Specifications

Description	Nm	lb-ft	lb-in
Door latch screws	12	9	—
Luggage compartment lid screws	9	—	80
Exterior door handle nuts	9	—	80
Luggage compartment lid latch striker screws	12	9	—
Fuel tank filler door retaining screws	3	—	27
Door latch striker plate screws	25	18	—

LOCK REPAIR/REPLACEMENT SPECIFICATIONS

Part Number	Lock Repair Package Name
F85Z-11582-AA	Ignition Cylinder
F8ZZ-6321990-AA	Door Lock
XR32-6343262-BA	Luggage Compartment Lid
	Luggage Compartment Lid, Remote
F8DZ-5406082-AA	Glove Box
F8DZ-5421970-AA	Lock Lever Kit

Handles, Locks, Latches And Mechanisms

Lock Cylinders

Individual lock cylinders are repaired by discarding the inoperative lock cylinder and building a new lock cylinder using the appropriate lock repair package. The lock repair package includes a detailed instruction sheet to build the new lock cylinder to the current key code of the vehicle.

Latch System

The door latch system consists of:

- front door latch remote control and cable assembly
- front door latch (21812)
- door latch control rod knob (21850)
- door handle (22404) and front door latch actuating rod (22152)
- lock cylinder (22050) and front door latch control cylinder rod (22134)
- door latch striker plate (22008)
- front door latch remote control cable (221A00)
- door lock cylinder (21990)
- window regulator switch plates (14524)
- adjunct actuator (218B20)
- circuit wiring and circuit protection
- front door lock switch (14017)
- luggage compartment lid latch with mechanical interior release handle and cable
- luggage compartment lid lock cylinder

Refer to Section 501-14B .

Luggage Compartment Lid Remote Control Lock Switch

The luggage compartment remote control system consists of:

- luggage compartment remote control lock switch (19C542) located in the glove compartment (06010)
- remote control lock actuator (part of the luggage compartment lid latch)
- circuit wiring and circuit protection

Refer to Section 501-14B .

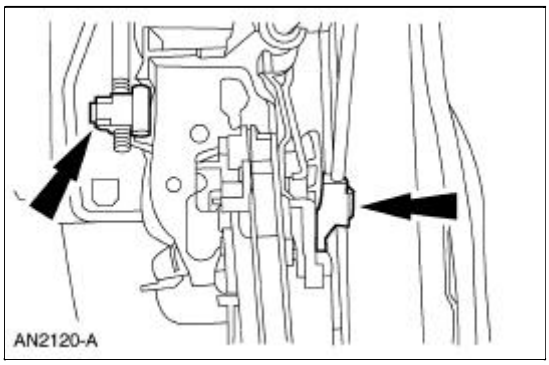
Locks, Latches And Mechanisms

Refer to Section 501-14B for power door lock and luggage compartment lid remote control lock switch diagnostics.

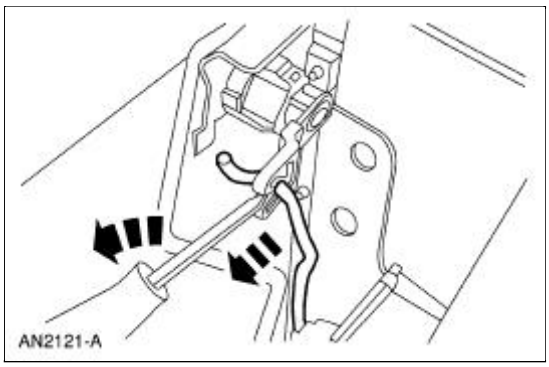
Latch —Door

Removal

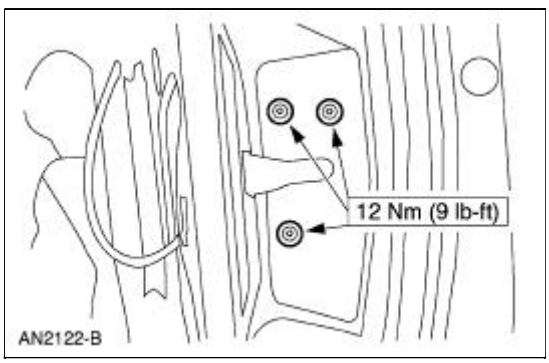
1. Remove the door trim panel (23942). For additional information, refer to Section 501-05 .
2. Release the actuating rods by opening the clips.



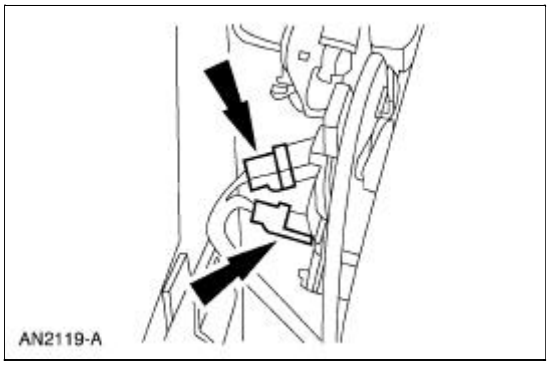
3. Using a screwdriver, release the lock cylinder actuating rod.



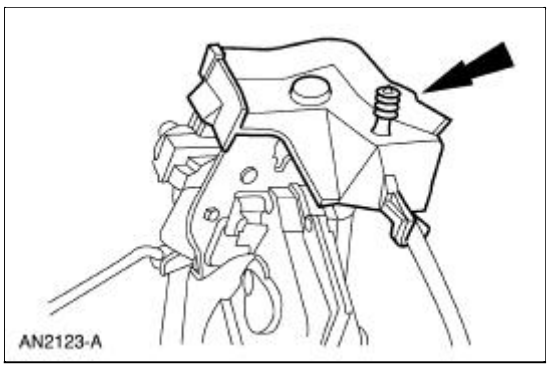
4. Remove the door latch screws.



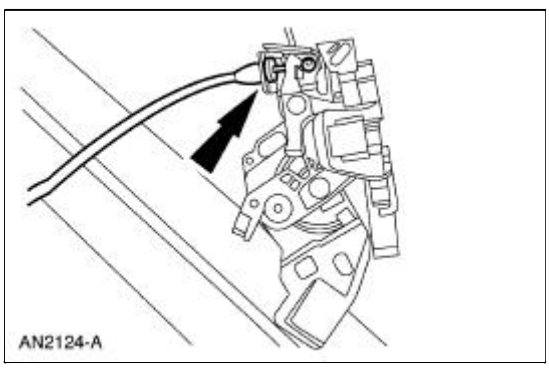
5. Disconnect the door ajar switch and the actuator electrical connectors.



6. Remove the water shield.



7. Release the interior door handle actuating cable.



8. Remove the door latch.

Installation

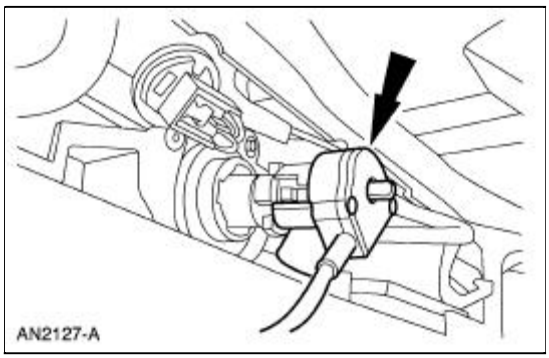
1. To install, reverse the removal procedure.

Latch —Luggage Compartment Lid

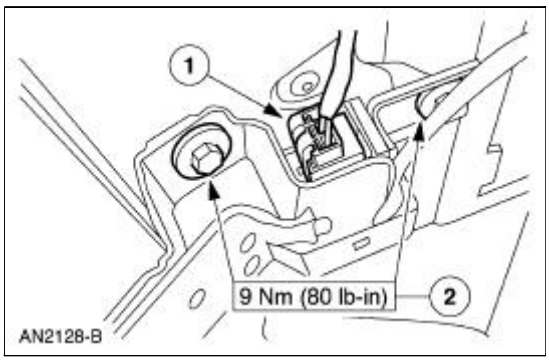
Removal

1. **NOTE:** The luggage compartment lid latch is equipped with mechanical interior release handle.

   Disconnect the luggage compartment lid lock actuator (432A38) cable.



2. Remove the luggage compartment lid latch (43200).
   1. Disconnect the electrical connector.
   2. Remove the three bolts.



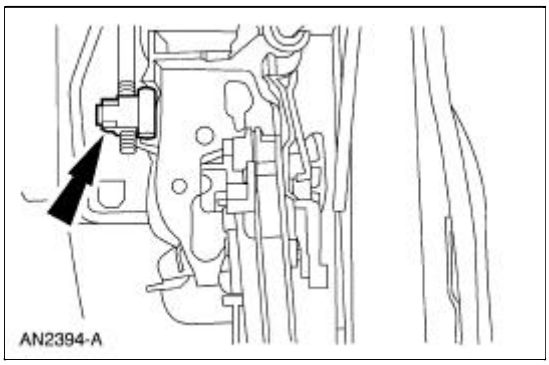
Installation

1. To install, reverse the removal procedure.

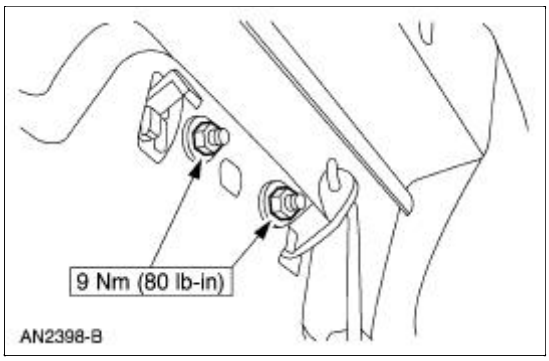
Handle —Exterior Door

Removal

1. Remove the door trim panel (23942). For additional information, refer to Section 501-05 .
2. Release the exterior door handle actuating rod by opening the clip.



3. Remove the exterior door handle nuts.



4. Remove the exterior door handle.

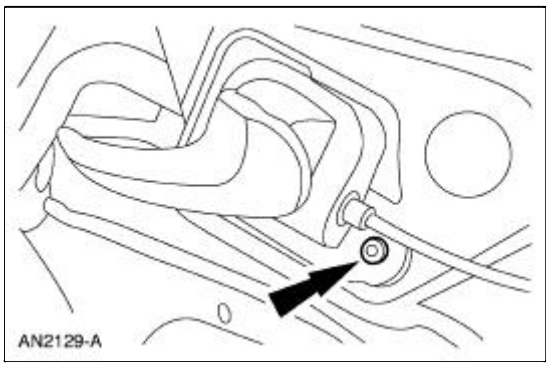
Installation

1. To install, reverse the removal procedure.

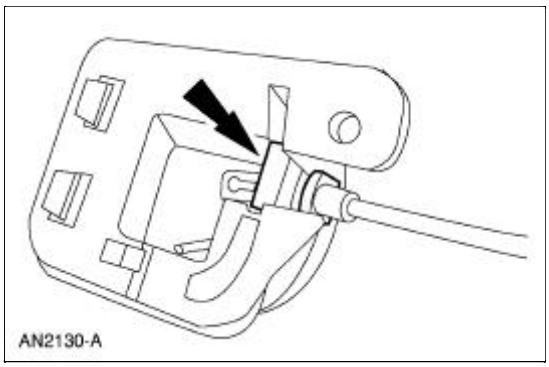
Handle —Interior Door

Removal

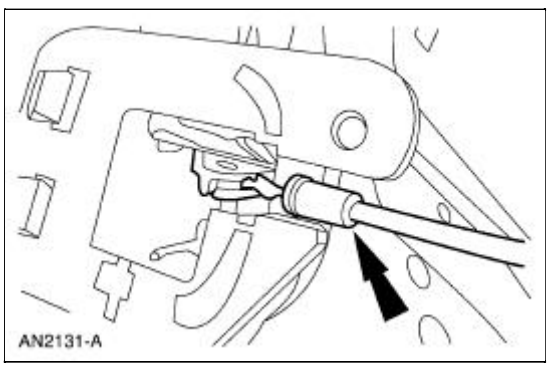
1. Remove the door trim panel (23942). For additional information, refer to Section 501-05 .
2. Remove the rivet.



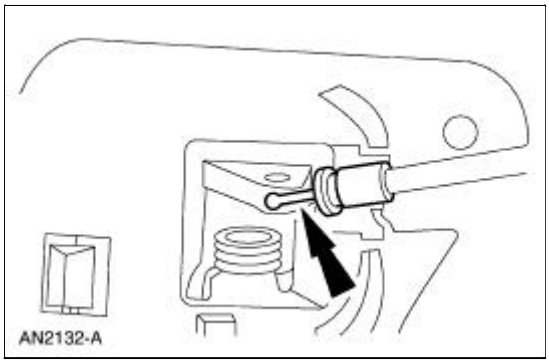
3. Remove the cable clip.



4. Release the cable housing from the interior handle.



5. Release the actuating cable from the interior handle and remove the handle.



Installation

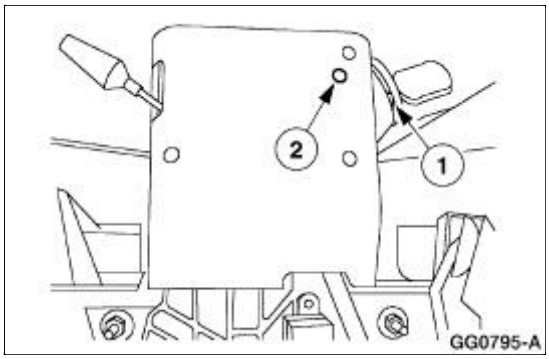
1. To install, reverse the removal procedure.

Ignition Lock Cylinder —Functional

Removal and Installation

1. Disconnect the battery ground cable. For additional information, refer to Section 414-01 .

2. Remove the ignition switch lock cylinder (11582).
    1. Insert the ignition key and turn to the RUN position.
    2. Using a 1/8-inch drift, press the ignition switch lock cylinder release pin through the access hole while pulling out the ignition switch lock cylinder.



3. To install, reverse the removal procedure.
    - Verify ignition switch lock cylinder operation.



Ignition Lock Cylinder —Non-Functional

Removal and Installation

1. **NOTE:** Make sure the front wheels are in the straight-ahead position.

   Disconnect the battery ground cable (14301) and wait at least one minute to allow the depletion of the restraint system backup power supply. For additional information, refer to Section 414-01 .

2. **WARNING: To avoid the risk of serious personal injury, read and follow all warnings, cautions, notes and instructions in the deactivation procedure.**

   Deactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in this section.

3. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, notes and instructions in the steering wheel removal and installation procedure.**

   Remove the steering wheel assembly. For additional information, refer to Wheel in this section.

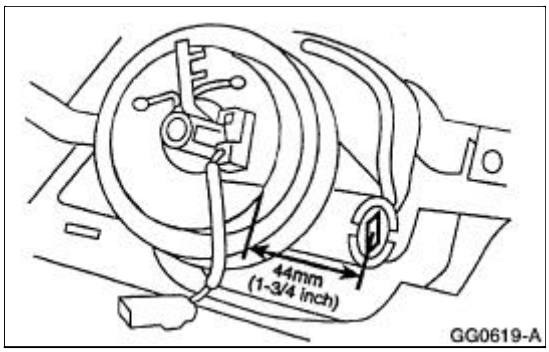
4. Twist off the cap from the ignition switch cylinder.



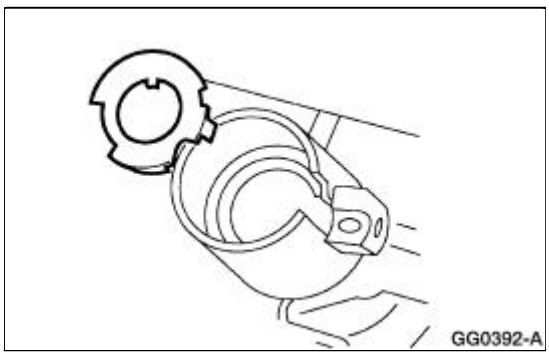
5. **NOTE:** The lock cylinder is repaired by discarding the inoperative lock cylinder and building a new lock cylinder using the appropriate lock repair package (F85Z-11582-AA). The lock repair package includes a detailed instruction sheet to build the new lock cylinder to the current key code of the vehicle.

Remove the ignition switch lock cylinder.

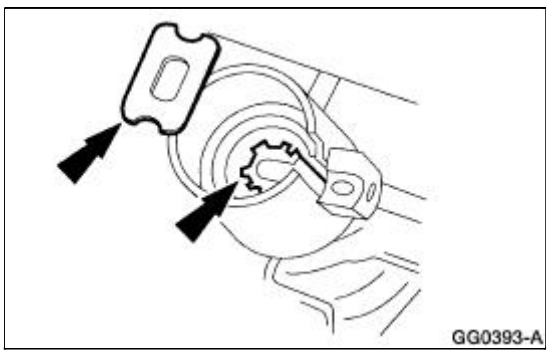
- Use a 1/8-inch diameter drill bit to drill out the lock cylinder retaining pin.
- Use a 3/8-inch drill bit to drill down the middle of the ignition lock key slot until the ignition switch lock cylinder breaks loose.
- Remove and discard the ignition switch lock cylinder and clean the drill shavings from the steering column.



6. Remove the bearing retainer.



7. Remove the bearing and gear.
   - Thoroughly clean all drill shavings from the steering column and inspect it for damage.



8. To install, reverse the removal procedure.
   - Install a new ignition switch lock cylinder.
   - Verify ignition switch lock cylinder operation.



9. **WARNING: To avoid the risk of serious personal injury, read and follow all warnings, cautions, notes and instructions in the reactivation procedure.**

   Reactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in this section.

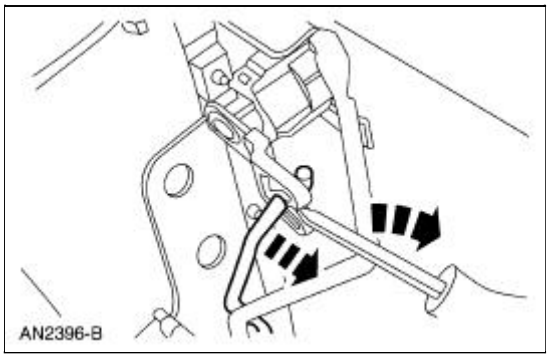
Lock Cylinder —Door

Removal

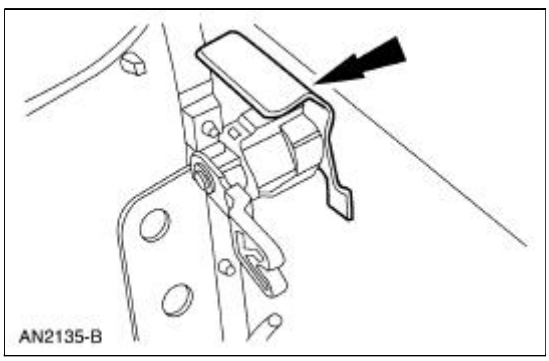
1. **NOTE:** Individual lock cylinders are repaired by discarding the inoperative cylinder and building a new lock cylinder using the appropriate lock repair package. The lock repair package includes a detailed instruction sheet to build the new lock cylinder to the current key code of the vehicle.

   Remove the door trim panel (23942). For additional information, refer to Section 501-05 .

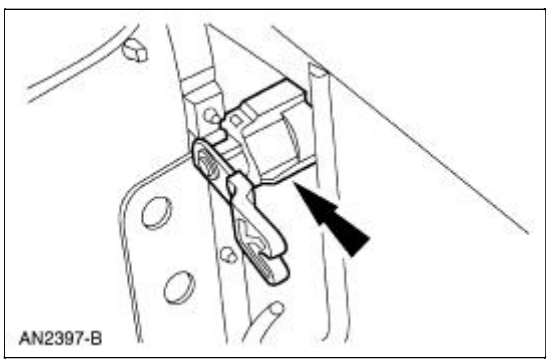
2. Using a screwdriver, release the lock cylinder actuating rod.



3. Remove the door lock cylinder retainer.



4. Remove the door lock cylinder (21990).



5. If necessary, transfer the lock cylinder arm to the new door lock cylinder (21990).

Installation

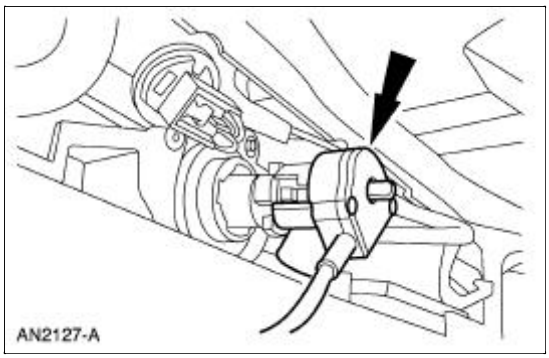
1. To install, reverse the removal procedure.

Lock Cylinder —Luggage Compartment Lid

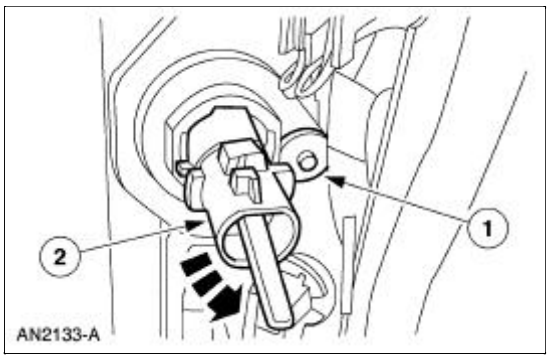
Removal

1. **NOTE:** Individual lock cylinders are repaired by discarding the inoperative cylinder and building a new lock cylinder using the appropriate lock repair package. The lock repair package includes a detailed instruction sheet to build the new lock cylinder to the current key code of the vehicle.

   Disconnect the luggage compartment lid lock actuator (432A38) cable.



2. Remove the luggage compartment lid lock cylinder (43262).
   1. Remove the rivet.
   2. Rotate the lock cylinder counterclockwise to remove.



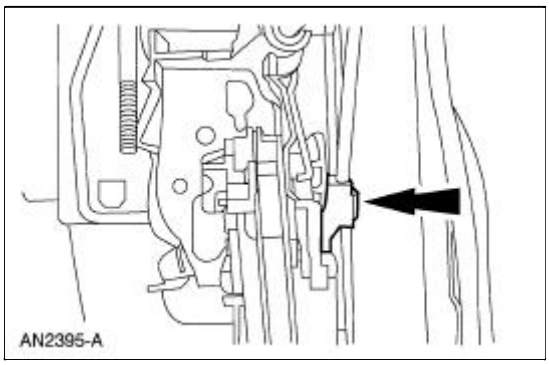
Installation

1. To install, reverse the removal procedure.

Push Button Rod —Door

Removal

1. Remove the door trim panel (23942). For additional information, refer to Section 501-05 .
2. Release the push button rod by opening the clip.



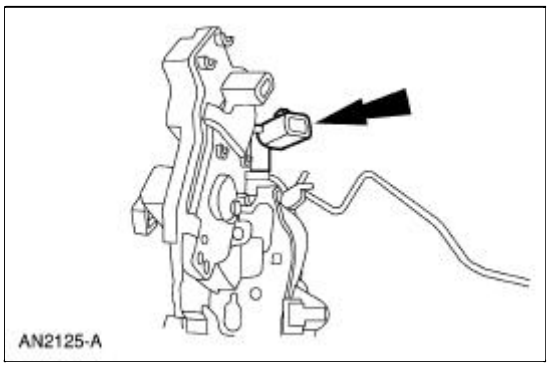
Installation

1. To install, reverse the removal procedure.

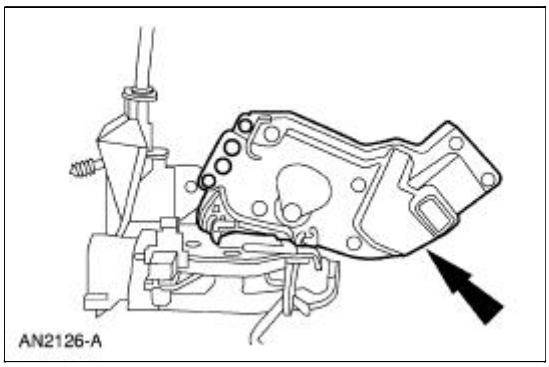
Actuator —Door Lock

Removal

1. Remove the door trim panel (23942). For additional information, refer to Section 501-05 .
2. Remove the door latch (21812). For additional information, refer to Latch—Door .
3. Remove the door ajar switch.
   - Release the locking tab.



4. Remove the adjunct actuator.



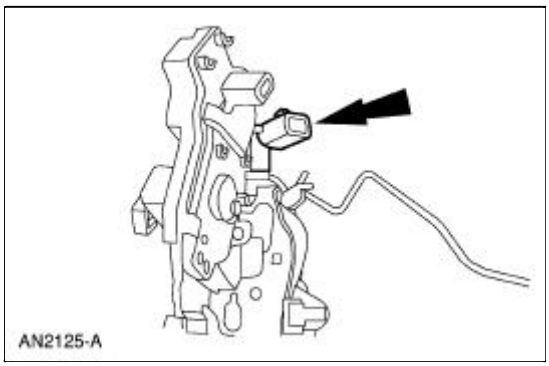
Installation

1. To install, reverse the removal procedure.

Switch —Door Ajar Switch

Removal

1. Remove the door trim panel (23942). For additional information, refer to Section 501-05 .
2. Remove the door latch (21812). For additional information, refer to Latch—Door .
3. Remove the door ajar switch.
   - Release the locking tab.



Installation

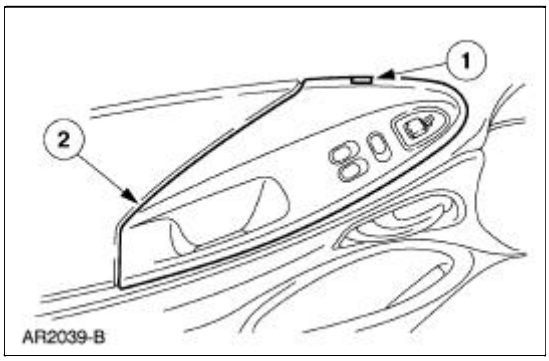
1. To install, reverse the removal procedure.

Switch —Door Lock

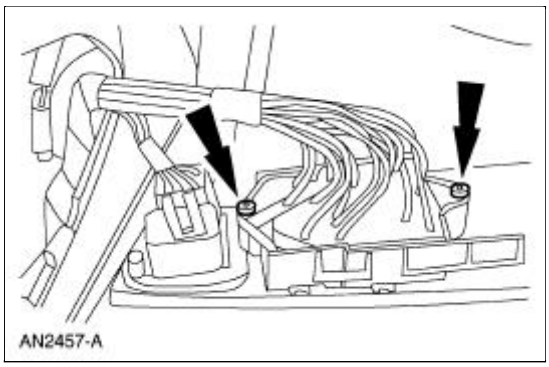
Removal

1. **CAUTION: Place a rag between the window regulator switch plate and the door trim panel to avoid damaging the door trim panel.**

   Position the window regulator switch plate (14524) aside.
   1. Pull at service notch.
   2. Lift to release the clip at the rear edge.



2. Remove the screws and the door lock switch (14017).



Installation

1. To install, reverse the removal procedure.

Keyless Entry

The electronic door lock system has two main components:

- generic electronic module (GEM)(14B204)
- keyless entry remote transmitter (15K601)

Keyless Entry

Refer to Wiring Diagrams Cell 59 , Generic Electronic Module for schematic and connector information.

Refer to Wiring Diagrams Cell 111 , Remote Keyless Entry (RKE) for schematic and connector information.

Special Tool(s)

 ST1137-A	73 Digital Multimeter or equivalent 105-R0051
 ST2332-A	Worldwide Diagnostic System (WDS) 418-F224 New Generation STAR (NGS) Tester 418-F052, or equivalent scan tool

Principles of Operation

NOTE: Battery power and ground must be remove before disconnecting the GEM connectors to avoid setting false codes.

Power Locks Operation

The power locks feature allows the customer to lock and unlock the doors via momentary switches located on the driver and passenger door. When the GEM detects a momentary press of the driver or passenger lock button, the GEM will supply power to the driver or passenger lock actuators for approximately 250 ms from relays internal to the GEM. When the GEM detects a momentary press of the driver or passenger unlock button, the GEM will supply power to the driver or passenger unlock actuators for approximately 250 ms from relays internal to the GEM.

Remote Keyless Entry Door Locks Operation

The remote entry feature allows the customer to unlock the driver door, unlock all doors, and lock all doors using a valid remote transmitter as long as the ignition switch is not in RUN or START. The driver door is unlocked whenever the GEM detects a valid remote transmitter unlock transmission. All the doors are unlocked when the GEM detects a second valid remote transmitter unlock transmission within three seconds of the first transmission. All the doors are locked when the GEM detects a valid remote transmitter lock transmission. If the GEM detects a second valid remote transmitter lock transmission within three seconds of the first transmission, the doors will lock again, the horn will sound for 20 ms and the parking lamps will flash for 200 ms to indicate the doors are locked. If the GEM detects the driver or passenger door is ajar during the second lock transmission, the doors are locked again and the horn is sounded twice. If the GEM detects a valid remote transmitter lock transmission within three seconds of detecting a valid remote transmitter unlock transmission, the

GEM will lock all the doors.

Remote Keyless Entry Luggage Compartment Operation

The luggage compartment lid is released whenever the GEM detects a valid remote transmitter luggage compartment release transmission.

Panic Alarm Operation

The panic alarm feature allows the vehicle to initiate an alarm for 2.75 minutes to identify itself using a valid remote transmitter. The panic alarm is activated whenever the GEM detects the ignition switch is in the OFF position or if the key is removed from the ignition, and the GEM detects a valid PANIC response from the remote transmitter. When the panic alarm is activated, the GEM:

- illuminates the courtesy lamps.
- flashes the parking lamps.
- toggles the horn on and off.

The panic alarm is deactivated whenever GEM detects:

- if the key causes a transition of the ignition switch circuits to
  - ACC.
  - RUN.
  - START.
- the remote transmitter
  - panic button.
  - unlock button.

The panic alarm is also deactivated after 2.75 minutes have gone by.

Remote Transmitter Programming Operation

This feature allows the customer to program up to four different transmitter identification codes (TIC) for four remote transmitters to the vehicle at any time. For additional information, refer to Programming—Keyless Entry Remote Transmitter .

Inspection and Verification

1. The keyless entry system is a generic electronic module (GEM).
2. Verify the customer concern by using the remote transmitters to operate the keyless entry system.
3. Visually inspect for the following obvious signs of mechanical and electrical damage.

Visual Inspection Chart

Mechanical	Electrical
● Binding latches	● CJB Fuses: ■ 39 (5A) ■ 19 (15A) ■ 25 (25A) ● BJB Fuse POWER WINDOWS (40A) ● Damaged wiring harness ● Loose or corroded connector(s) ● Circuitry open/shorted ● Damaged relays ● Remote transmitter ● Remote transmitter batteries

4. If the concern remains after the inspection, connect the scan tool to the data link connector (DLC) located beneath the instrument panel and select the vehicle to be tested from the scan tool menu. If the scan tool does not communicate with the vehicle:
   - check that the program card is correctly installed.
   - check the connections to the vehicle.
   - check the ignition switch position.
5. If the scan tool still does not communicate with the vehicle, refer to the scan tool manual.
6. Carry out the DATA LINK DIAGNOSTIC TEST. If the scan tool responds with:
   - CKT914, CKT915 or CKT70 = ALL ECUS NO RESP/NOT EQUIP, refer to Section 418-00 .
   - NO RESP/NOT EQUIP for GEM, go to Pinpoint Test A.
   - SYSTEM PASSED, retrieve and record the continuous diagnostic trouble codes (DTCs), erase the continuous DTCs, and carry out the self-test diagnostics for the GEM.
7. If the DTCs retrieved are related to the concern, go to the GEM Diagnostic Trouble Code (DTC) Index to continue diagnostics.
8. If no DTCs related to the concern are retrieved, proceed to Symptom Chart to continue diagnostics.

GEM Diagnostic Trouble Code (DTC) Index

DTC	Description	Source	Action
B1217	Horn Relay Coil Circuit Failure	GEM	GO to Pinpoint Test E .
B1218	Horn Relay Coil Circuit Short to Vbatt	GEM	GO to Pinpoint Test E .
B1312	Lamp Headlamp Input Circuit Short to Battery	GEM	REFER to Section 417-01 .
B1317	Battery Voltage High	GEM	REFER to Section 414-00 .
B1318	Battery Voltage Low	GEM	REFER to Section 414-00 .
B1322	Driver Door Ajar Circuit Short to Ground	GEM	REFER to Section 417-02 .
B1330	Passenger Door Ajar Circuit Short to Ground	GEM	REFER to Section 417-02 .
B1334	Decklid Ajar Rear Door Circuit	GEM	REFER to Section 417-02 .

	Short to Ground		
B1339	Chime Input Request Circuit Short to Battery	GEM	REFER to Section 413-09 .
B1340	Chime Input Request Circuit Short to Ground	GEM	REFER to Section 413-09 .
B1342	ECU Is Defective	GEM	CLEAR the DTC. Retrieve the DTCs. If DTC B1342 is retrieved, INSTALL a new GEM. REFER to Section 419-10 .
B1353	Ignition Key-In Circuit Open	GEM	REFER to Section 413-09 .
B1359	Ignition Run/Acc Circuit Failure	GEM	REFER to Section 211-05 .
B1396	Power Door Lock Circuit Short to Battery	GEM	GO to Pinpoint Test B .
B1397	Power Door Unlock Circuit Short to Battery	GEM	GO to Pinpoint Test B .
B1405	Driver Power Window Down Circuit Short to Battery	GEM	REFER to Section 501-11 .
B1408	Driver Power Window Up Circuit Short to Battery	GEM	REFER to Section 501-11 .
B1833	Door Unlock Disarm Switch Circuit Short to Ground	GEM	REFER to Section 419-01 .
B1498	Decklid Punch-Out Sensor Ground Short.	GEM	GO to Pinpoint Test D .
B1603	Lamp Anti-Theft Indicator Circuit Failure	GEM	REFER to Section 413-01 .
B1410	Driver Power Window Motor Circuit Failure	GEM	REFER to Section 501-11 .
B1426	Lamp Safety Belt Circuit Short to Battery	GEM	REFER to Section 413-01 .
B1428	Lamp Safety Belt Circuit Failure	GEM	REFER to Section 413-01 .
B1431	Wiper Brake/Run Relay Circuit Failure	GEM	REFER to Section 501-16 .
B1432	Wiper Brake/Run Relay Circuit Short to Battery	GEM	REFER to Section 501-16 .
B1434	Wiper Hi/Low Speed Relay Coil Circuit Failure	GEM	REFER to Section 501-16 .
B1436	Wiper Hi/Low Speed Relay Coil Circuit Short to Battery	GEM	REFER to Section 501-16 .
B1438	Wiper Mode Select Switch Circuit Failure	GEM	REFER to Section 501-16 .
B1441	Wiper Mode Select Switch Circuit Short to Ground	GEM	REFER to Section 501-16 .
B1446	Wiper Park Sense Circuit Failure	GEM	REFER to Section 501-16 .
B1448	Wiper Park Sense Circuit Short to Battery	GEM	REFER to Section 501-16 .
B1450	Wiper Wash/Delay Switch Circuit Failure	GEM	REFER to Section 501-16 .
B1453	Wiper Wash/Delay Switch Circuit Short to Ground	GEM	REFER to Section 501-16 .

B1458	Wiper Washer Pump Motor Relay Circuit Failure	GEM	REFER to Section 501-16 .
B1460	Wiper Washer Pump Motor Relay Coil Circuit Short to Battery	GEM	REFER to Section 501-16 .
B1462	Safety Belt Switch Circuit Failure	GEM	REFER to Section 413-09 .
B1466	Wiper Hi/Low Speed Not Switching	GEM	REFER to Section 501-16 .
B1473	Wiper Low Speed Circuit Motor Failure	GEM	REFER to Section 501-16 .
B1476	Wiper High Speed Circuit Motor Failure	GEM	REFER to Section 501-16 .
B1551	Decklid Release Circuit Failure	GEM	GO to Pinpoint Test D .
B1553	Decklid Release Circuit Short to Battery	GEM	GO to Pinpoint Test D .
B1555	Ignition Run/Start Circuit Failure	GEM	REFER to Section 211-05 .
B1687	Lamp Dome Input Circuit Short to Battery	GEM	REFER to Section 417-02 .
B2486	LF Side Repeater Lamp Output Circuit Failure	GEM	REFER to Section 417-01 .
B1605	Lamp Anti-Theft Indicator Circuit Short to Battery	GEM	REFER to Section 501-16 .
B2488	RF Side Repeater Lamp Output Circuit Failure	GEM	REFER to Section 417-01 .
C1189	Brake Fluid Level Sensor Input Short Circuit to Ground	GEM	REFER to Section 413-01 .
C1223	Lamp Brake Warning Output Circuit Failure	GEM	REFER to Section 413-01 .
C1225	Lamp Brake Warning Output Circuit Short to Battery	GEM	REFER to Section 413-01 .

Symptom Chart

Symptom Chart

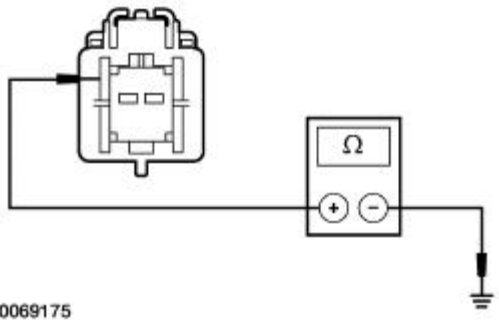
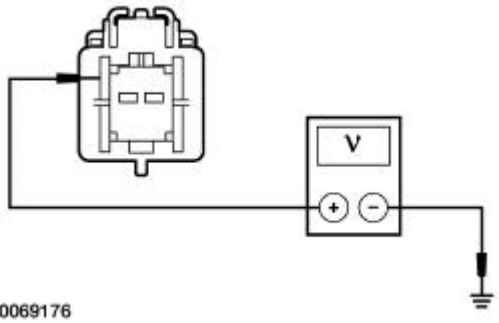
Condition	Possible Sources	Action
• No communication with the generic electronic module	• Circuitry. • CJB Fuse 39 (5A). • GEM.	• GO to Pinpoint Test A .
• All door locks are inoperative	• CJB Fuse 19 (15A). • BJB Fuse POWER WINDOWS (40A). • Circuitry. • GEM. • Switches. • Lock actuators.	• GO to Pinpoint Test B .
• The doors do not lock/unlock using the remote transmitter	• Ignition switch. • GEM.	• GO to Pinpoint

	• Remote transmitter. • Remote transmitter batteries.	Test C .
• The luggage compartment door is inoperative using the remote transmitter	• CJB Fuse 25 (25A). • Remote transmitter batteries. • Remote transmitter. • GEM. • Circuitry. • Luggage compartment lid release relay.	• GO to Pinpoint Test D .
• Panic function does not operate correctly	• GEM. • Driver door unlock relay. • Circuitry. • Remote transmitter and batteries. • Courtesy lamps. • Horn relay. • Horn. • Parklamps.	• GO to Pinpoint Test E .

Pinpoint Tests

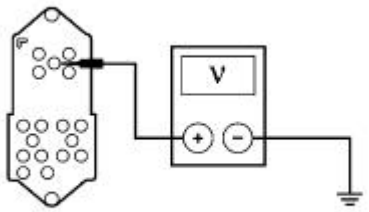
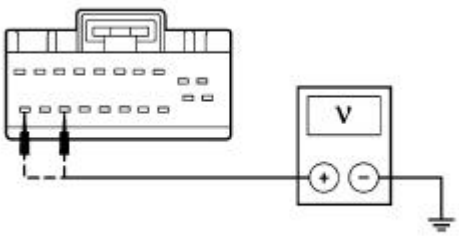
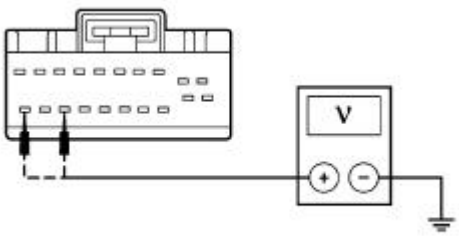
PINPOINT TEST A: NO COMMUNICATION WITH THE GENERIC ELECTRONIC MODULE

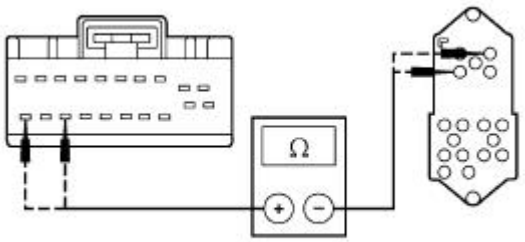
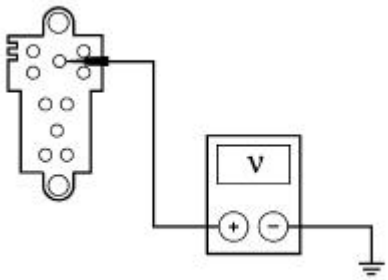
Test Step	Result / Action to Take
CAUTION: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.	
A1 CHECK THE GENERIC ELECTRONIC MODULE (GEM) POWER SUPPLY • Key in OFF position. • Disconnect: Generic Electronic Module (GEM) C201a. • Disconnect: GEM C201b. • Key in ON position. • Using the following table, measure the voltage between the GEM, harness side and ground. **Connector / Pin / Circuit** C201a / 4 / 400 (LB/BK) C201a / 1 / 1006 (DG/WH) C201b / 2 / 1001 (WH/YE) C201b / 3 / 193 (YE/LG) • **Are the voltages greater than 10 volts?**	**Yes** GO to A2 . **No** REPAIR the circuit(s) in question. TEST the system for normal operation.
A2 CHECK THE GEM GROUND CIRCUIT 397 (BK/WH) FOR OPEN • Key in OFF position.	**Yes**

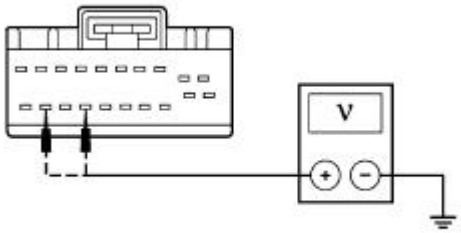
• Measure the reistance between the GEM C201b pin 4, circuit 397 (BK/WH), harness side and ground.  A0069175 • **Is the reistance less than 5 ohms?**	GO to A3 . **No** REPAIR the circuit(s) in question. TEST the system for normal operation.
A3 CHECK CIRCUIT 397 (BK/WH) FOR SHORT TO POWER	
• Measure the voltage between the GEM C201b pin 4, circuit 397 (BK/WH), harness side and ground.  A0069176 • **Is any voltage present?**	**Yes** REPAIR the circuit. TEST the system for normal operation. **No** REFER to Section 418-00 .

PINPOINT TEST B: ALL DOOR LOCKS ARE INOPERATIVE

Test Step	Result / Action to Take
B1 CHECK POWER LOCK INPUTS TO THE GEM	
• Connect the diagnostic tool. • Monitor the GEM PIDS DR_LOCK, DR_UNLK, PD_LOCK, PD_UNLK, while depressing the driver and passenger power door lock and unlock switches. • **Do the PID values agree with the switch positions?**	**Yes** GO to B11 . **No** GO to B2 .
B2 ISOLATE BETWEEN THE DRIVER AND PASSENGER POWER DOOR LOCK SWITCHES	
NOTE: This PID may not be supported in the normal scan tool PID list. It can be located in the Function test — "Transmitter Tic/Data". When this test is activated, the appropriate results may be obtained when pressing the keyfob buttons. • Connect the diagnostic tool. • Monitor the GEM PIDS DR_LOCK and DR_UNLK, while depressing the driver power door lock and unlock switches. • **Do the PID values agree with the switch positions?**	**Yes** GO to B7 . **No** GO to B3 .
B3 CHECK CIRCUIT 326 (WH/VT) FOR VOLTAGE — DRIVER SIDE	
• Disconnect: Master Window/Door Lock Control Switch C508. • Measure the voltage between master window/door lock control switch C508 Pin 3, Circuit 326 (WH/VT), harness side and ground.	**Yes** GO to B4 . **No**

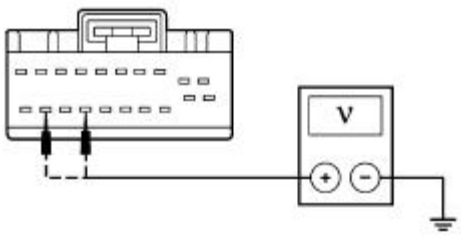
 GN3147-A ● **Is the voltage greater than 10 volts?**	REPAIR Circuit 326 (WH/VT). REPEAT the self-test. CLEAR the DTCs.
B4 CHECK THE DRIVER POWER DOOR LOCK SWITCH FOR CORRECT OPERATION ● Carry out the master window/door lock control switch component test. REFER to Wiring Diagrams Cell 149, Component Testing. ● **Is the master window/door lock control switch OK?**	**Yes** GO to B5 . **No** INSTALL a new master window/door lock control switch. REPEAT the self-test. CLEAR the DTCs.
B5 CHECK CIRCUITS 129 (LG) AND 1014 (VT) FOR SHORT TO POWER ● Key in OFF position. ● Disconnect: GEM C201c. ● Measure the voltage between GEM C201c Pin 20, Circuit 129 (LG), harness side and ground; and between GEM C201c Pin 18, Circuit 1014 (VT), harness side and ground.  GN3148-A ● Key in ON position. ● Measure the voltage between GEM C201c Pin 20, Circuit 129 (LG), harness side and ground; and between GEM C201c Pin 18, Circuit 1014 (VT), harness side and ground.  GN3148-A ● Key in OFF position. ● **Are the voltages greater than 10 volts?**	**Yes** REPAIR the circuit in question. REPEAT the self-test. CLEAR the DTCs. **No** GO to B6 .

B6 CHECK CIRCUITS 129 (LG) AND 1014 (VT) FOR OPEN • Measure the resistance between master window/door lock control switch C508 Pin 4, Circuit 129 (LG), harness side and GEM C201c Pin 20, Circuit 129 (LG), harness side; and between master window/door lock control switch C508 Pin 2, Circuit 1014 (VT), harness side and GEM C201c 2 Pin 18, Circuit 129 (LG), harness side.  GN3149-A • **Are the resistances less than 5 ohms?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR the circuit in question. REPEAT the self-test. CLEAR the DTCs.
B7 CHECK CIRCUIT 326 (WH/VT) FOR VOLTAGE — PASSENGER SIDE • Disconnect: Passenger Window/Door Lock Control Switch C629. • Measure the voltage between passenger/window door lock control switch C629 Pin 3, Circuit 326 (WH/VT), harness side and ground.  GN3150-A • **Is the voltage greater than 10 volts?**	**Yes** GO to B8 . **No** REPAIR Circuit 326 (WH/VT). REPEAT the self-test. CLEAR the DTCs.
B8 CHECK THE PASSENGER POWER DOOR LOCK SWITCH FOR CORRECT OPERATION • Carry out the passenger window/door lock control switch component test. REFER to Wiring Diagrams Cell 149, Component Testing. • **Is the master window/door lock control switch OK?**	**Yes** GO to B9 . **No** INSTALL a new master window/door lock control switch. REPEAT the self-test. CLEAR the DTCs.
B9 CHECK CIRCUITS 119 (PK/YE) AND 120 (PK/LG) FOR SHORT TO POWER • Disconnect: GEM C201c. • Measure the voltage between GEM C201c Pin 19, Circuit 119 (PK/YE), harness side and ground; and between GEM C201c Pin 17, Circuit 120 (PK/LG), harness side and ground.	**Yes** REPAIR the circuit in question. REPEAT the self-test. CLEAR the DTCs. **No** GO to B10 .



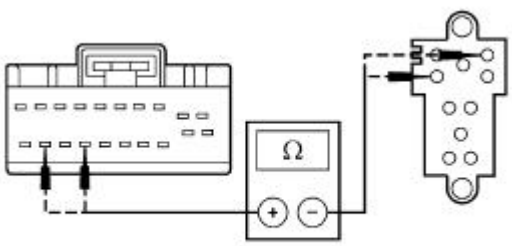
GN3151-A

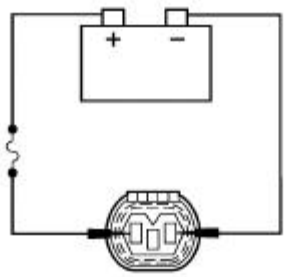
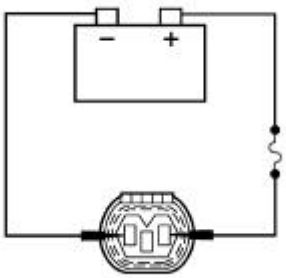
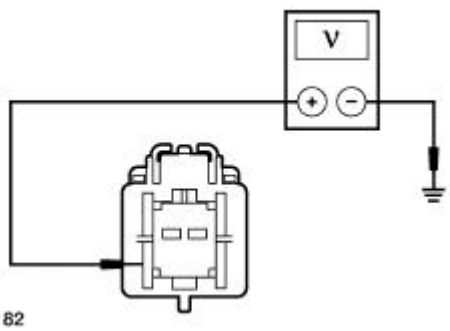
- Key in ON position.
- Measure the voltage between GEM C201c Pin 19, Circuit 119 (PK/YE), harness side and ground; and between GEM C201c Pin 17, Circuit 120 (PK/LG), harness side and ground.

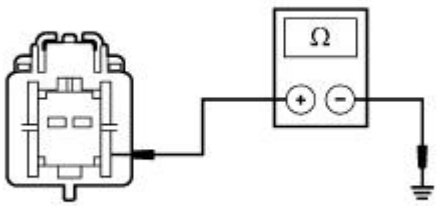
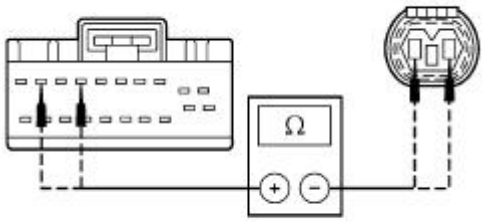
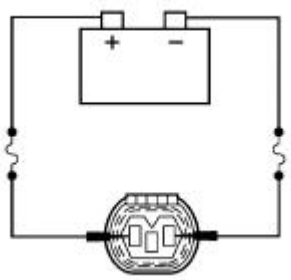


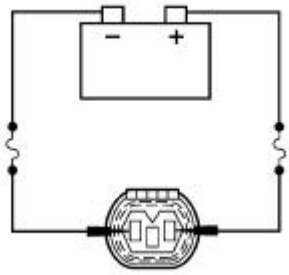
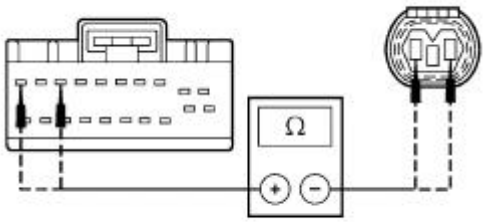
GN3151-A

- Key in OFF position.
- **Are the voltages greater than 10 volts?**

B10 CHECK CIRCUITS 119 (PK/YE) AND 120 (PK/LG) FOR OPEN	
• Measure the resistance between passenger window/door lock control switch C629 Pin 2, Circuit 119 (PK/YE), harness side and GEM C201c Pin 19, Circuit 119 (PK/YE), harness side; and between passenger window/door lock control switch C629 Pin 4, Circuit 120 (PK/LG), harness side and GEM C201c Pin 17, Circuit 120 (PK/LG), harness side.  GN3152-A • **Are the resistances less than 5 ohms?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR the circuit in question. REPEAT the self-test. CLEAR the DTCs.
B11 CHECK GEM CONTROL OF THE POWER DOOR LOCKS	
• Connect the diagnostic tool. • Trigger the GEM active command LOCK, UNLOCK, DD UNLOCK, and DD LOCK ON and OFF. • **Do the doors lock and unlock?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** GO to B12 .

B12 ISOLATE BETWEEN DRIVER AND PASSENGER POWER LOCK ACTUATORS	
• Connect the diagnostic tool. • Trigger the GEM active command LOCK and DD UNLOCK ON and OFF. • **Did the driver door lock and unlock?**	**Yes** GO to B17 . **No** GO to B13 .
B13 CHECK THE DRIVER POWER LOCK ACTUATOR OPERATION	
• Disconnect: Driver Door Lock Actuator C525. • Momentarily connect a fused (40A) jumper wire between battery and driver door lock actuator Pin 1, component side; and connect a jumper wire between ground and driver door lock actuator Pin 2, component side.  GN3170-A • Reverse the jumper wire connections and momentarily connect.  GN3171-A • **Did the driver door lock and unlock?**	**Yes** GO to B14 . **No** INSTALL a new driver door lock actuator. For additional information, REFER to Actuator . REPEAT the self-test. CLEAR the DTCs.
B14 CHECK CIRCUIT 193 (YE/LG) FOR OPEN	
NOTE: Verify voltage at BJB Fuse POWER WINDOWS (40A) before completing this step. • Disconnect: GEM C201b. • Measure the voltage between GEM C201b Pin 3, Circuit 193 (YE/LG), harness side and ground.  A0069182 • **Is the voltage greater than 10 volts?**	**Yes** GO to B15 . **No** REPAIR Circuit 193 (YE/LG). REPEAT the self-test. CLEAR the DTCs.
B15 CHECK CIRCUIT 1205 (BK) FOR OPEN	
• Measure the resistance between GEM C201b Pin 1, Circuit 1205	**Yes** GO to B16 .

(BK), harness side and ground.  A0069183 ● **Is the resistance less than 5 ohms?**	**No** REPAIR Circuit 1205 (BK). REPEAT the self-test. CLEAR the DTCs.
B16 CHECK CIRCUITS 163 (PK/YE) AND 1015 (RD/WH) FOR OPEN	
● Disconnect: GEM C201c. ● Measure the resistance between driver door lock actuator C525 Pin 2, Circuit 1015 (RD/WH), harness side and GEM C201c Pin 9, Circuit 1015 (RD/WH), harness side; and between driver door lock actuator C525 Pin 1, Circuit 163 (RD/OG), harness side, and GEM C201c Pin 7, Circuit 163 (RD/OG), harness side.  GN3157-A ● **Are the resistances less than 5 ohms?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR the circuit in question. REPEAT the self-test. CLEAR the DTCs.
B17 CHECK THE PASSENGER POWER LOCK ACTUATOR OPERATION	
● Disconnect: Passenger Door Lock Actuator C603. ● Momentarily connect a fused (40A) jumper wire between battery and passenger door lock actuator Pin 1, component side; and connect a jumper wire between ground and passenger door lock actuator Pin 2, component side.  GN3153-A ● Reverse the jumper wire connections and momentarily connect.	**Yes** GO to B18 . **No** INSTALL a new passenger door lock actuator. REFER to Actuator . REPEAT the self-test. CLEAR the DTCs.

 GN3154-A ● **Did the passenger door lock and unlock?**	
B18 CHECK CIRCUITS 163 (RD/OG), 1015 (RD/WH), 117 (PK/BK), AND 118 (PK/OG) FOR OPEN ● Disconnect: GEM C201c. ● Measure the resistance between passenger door lock actuator C603 Pin 2, Circuit 1015 (RD/WH), harness side and GEM C201c Pin 10, Circuit 117 (PK/BK), harness side; and between passenger door lock actuator C603 Pin 1, Circuit 163 (RD/OG), harness side, and GEM C201c Pin 8, Circuit 118 (PK/OG), harness side.  GN3158-A ● **Are the resistances less than 5 ohms?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR the circuit in question. REPEAT the self-test. CLEAR the DTCs.

PINPOINT TEST C: THE DOORS DO NOT LOCK/UNLOCK USING THE REMOTE TRANSMITTER

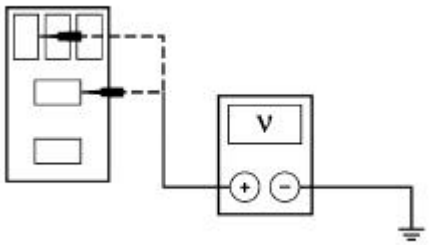
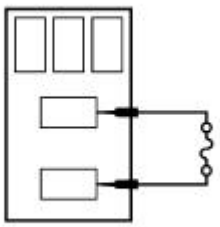
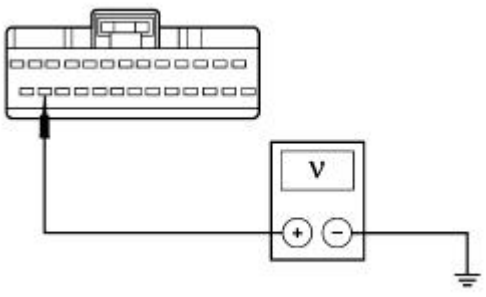
Test Step	Result / Action to Take
C1 CHECK THE LOCK OPERATION USING THE DRIVER DOOR LOCK SWITCH ● Lock and unlock the doors using the driver door lock switch. ● **Do all the doors lock and unlock correctly?**	**Yes** GO to C2 . **No** GO to Pinpoint Test B .
C2 CHECK IGNITION STATES ● Connect the diagnostic tool. ● Monitor the GEM PIDS IGN_KEY, IGN_A, IGN_S, and IGN_R while cycling the ignition switch through the OFF, ACC, RUN, START and key out positions. ● **Do the PID values agree with the ignition switch positions?**	**Yes** GO to C3 . **No** For key-in-ignition concerns, REFER to Section 413-09 .
C3 CHECK THE GEM FUNCTION TEST TIC/DATA **NOTE:** This PID may not be supported in	**Yes**

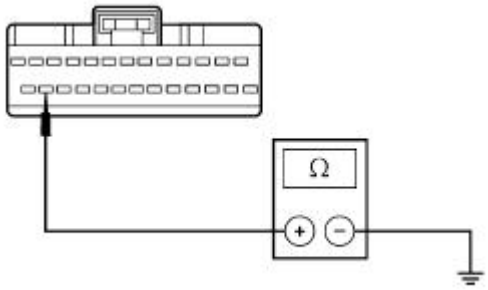
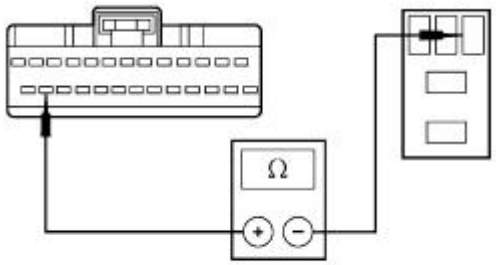
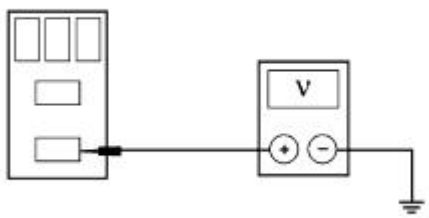
the normal scan tool PID list. It can be located in the Function Test — "Transmitter Tic/DATA". When this test is activated, the appropriate results may be obtained when pressing the keyfob buttons. ● Remove the ignition key from the ignition. ● Connect the diagnostic tool. ● Monitor the GEM FUNCTION TEST TIC/DATA while pressing the lock and unlock buttons on the remote transmitter. ● **Does LAST DATA RECEIVED match the button presses of the remote transmitter?**	INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** GO to C4 .
C4 CHECK THE BATTERIES IN THE REMOTE TRANSMITTER ● Install new batteries in the remote transmitter. ● Connect the diagnostic tool. ● Monitor the GEM FUNCTION TEST TIC/DATA while pressing the lock and unlock buttons on the remote transmitter. ● **Does LAST DATA RECEIVED match the button presses of the remote transmitter?**	**Yes** SYSTEM is OK. REPEAT the self-test. CLEAR the DTCs. **No** GO to C5 .
C5 REPROGRAM THE REMOTE TRANSMITTERS TO THE GEM ● **NOTE:** When carrying out the following procedure it must be noted that all previous programmed remote transmitters will be erased. The customer needs to be informed that any remote transmitters not present during the programming mode will not operate the vehicle. All remote transmitters must be programmed at the same time. ● Reprogram the remote transmitter to the GEM. For additional information, refer to Programming—Keyless Entry Remote Transmitter . ● Connect the diagnostic tool. ● Monitor the GEM FUNCTION TEST TIC/DATA while pressing the lock and unlock buttons on the remote transmitter. ● **Does LAST DATA RECEIVED match the button presses of the remote transmitter?**	**Yes** SYSTEM is OK. REPEAT the self-test. CLEAR the DTCs. **No** PROGRAM a new remote transmitter to the vehicle. For additional information, REFER to Programming—Keyless Entry Remote Transmitter . REPEAT the self-test. CLEAR the DTCs. If the problem still remains, INSTALL a new GEM and program the remote transmitters to the vehicle. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs.

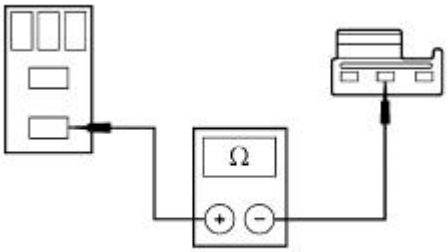
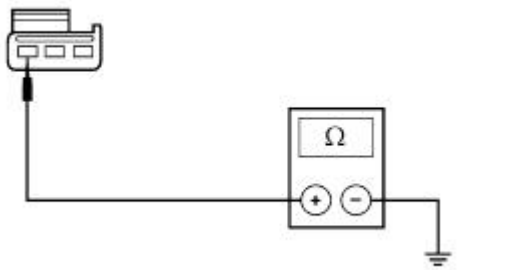
PINPOINT TEST D: THE LUGGAGE COMPARTMENT DOOR IS INOPERATIVE USING THE REMOTE TRANSMITTER

Test Step	Result / Action to Take
D1 CHECK IGNITION STATES ● Connect the diagnostic tool. ● Monitor the GEM PIDS IGN_KEY, IGN_A, IGN_S, and IGN_R while cycling the ignition switch through the OFF, ACC, RUN, START and key out positions.	**Yes** GO to D2 . **No**

• **Do the PID values agree with the ignition switch positions?**	REFER to Section 413-09 for key-in-ignition warning chime concerns.
D2 CHECK THE GEM PID LAST DATA RECEIVED FOR LUGGAGE COMPARTMENT	
• Remove the ignition key from the ignition. • Connect the diagnostic tool. • Monitor the GEM PID LAST DATA RECEIVED while pressing and releasing the luggage compartment, panic, lock, and unlock buttons of the remote transmitter. • **Does LAST DATA RECEIVED match the button presses of the remote transmitter?**	**Yes** GO to D5 . **No** GO to D3 .
D3 CHECK THE BATTERIES IN THE REMOTE TRANSMITTER	
• Install new batteries in the remote transmitter. • Connect the diagnostic tool. • Monitor the GEM FUNCTION TEST TIC/DATA while pressing the luggage compartment button on the remote transmitter. • **Does LAST DATA RECEIVED match the button presses of the remote transmitter?**	**Yes** SYSTEM is OK. REPEAT the self-test. CLEAR the DTCs. **No** GO to D4 .
D4 REPROGRAM THE REMOTE TRANSMITTERS TO THE GEM	
• **NOTE:** When carrying out the following procedure, it must be noted that all previous programmed remote transmitters will be erased. The customer needs to be informed that any remote transmitters not present during the programming mode will not operate the vehicle. All remote transmitters must be programmed at the same time. • Reprogram the remote transmitter to the GEM. For additional information, refer to Programming—Keyless Entry Remote Transmitter . • Connect the diagnostic tool. • Monitor the GEM FUNCTION TEST TIC/DATA while pressing the lock and unlock buttons on the remote transmitter. • **Does LAST DATA RECEIVED match the button presses of the remote transmitter?**	**Yes** SYSTEM is OK. REPEAT the self-test. CLEAR the DTCs. **No** PROGRAM a new remote transmitter to the vehicle. For additional information, REFER to Programming—Keyless Entry Remote Transmitter . REPEAT the self-test. CLEAR the DTCs. If the problem still remains, INSTALL a new GEM and program the remote transmitters to the vehicle. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs.
D5 CHECK THE GEM OUTPUT TO THE LUGGAGE COMPARTMENT	
• Trigger the GEM active command RELEASE to ON and OFF. • **Did the luggage compartment release?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** GO to D6 .
D6 CHECK CIRCUIT 931 (OG) FOR OPEN	
• Disconnect: Luggage Compartment Lid Release Relay. • Measure the voltage between luggage compartment lid release relay Pin 2, Circuit 931 (OG), harness side and ground; and between luggage compartment lid release	**Yes** GO to D7 . **No**

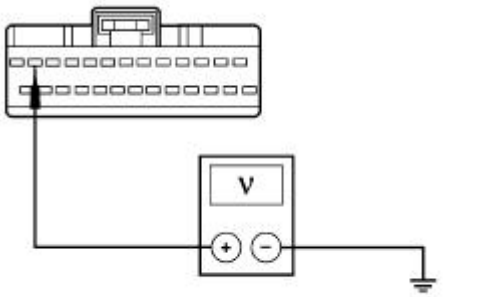
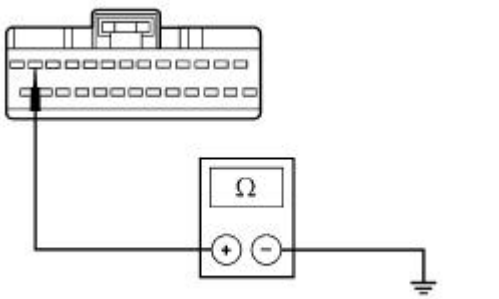
relay Pin 5 Circuit 931 (OG), harness side and ground  GN3159-A ● **Is the voltage greater than 10 volts?**	REPAIR Circuit 931 (OG). REPEAT the self-test. CLEAR the DTCs.
D7 BYPASS THE GEM AND RELAY CONTROL	
● Momentarily connect a 25A jumper wire between the luggage compartment lid release relay Pin 3 and Pin 5.  GN3173-A ● **Did the luggage compartment lid release?**	**Yes** GO to D8 . **No** GO to D12 .
D8 CHECK LUGGAGE COMPARTMENT LID RELEASE RELAY	
● Carry out the luggage compartment lid release relay. REFER to Wiring Diagrams Cell 149, Component Testing. ● **Is the luggage compartment lid release relay OK?**	**Yes** GO to D9 . **No** INSTALL a new luggage compartment lid release relay. REPEAT the self-test. CLEAR the DTCs.
D9 CHECK CIRCUIT 599 (PK/LG) FOR SHORT TO POWER	
● Disconnect: GEM C201c. ● Measure the voltage between GEM C201c Pin 25, Circuit 599 (PK/LG), harness side and ground.  GN3160-A ● **Is the voltage greater than 10 volts?**	**Yes** REPAIR Circuit 599 (PK/LG). REPEAT the self-test. CLEAR the DTCs. **No** GO to D10 .
D10 CHECK CIRCUIT 599 (PK/LG) FOR SHORT TO GROUND	
● Measure the resistance between GEM C201c Pin 25,	**Yes**

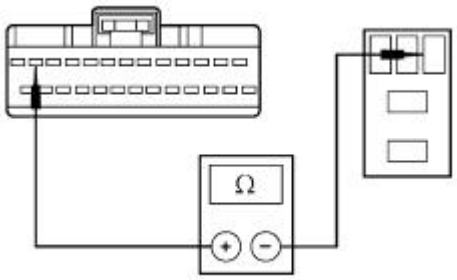
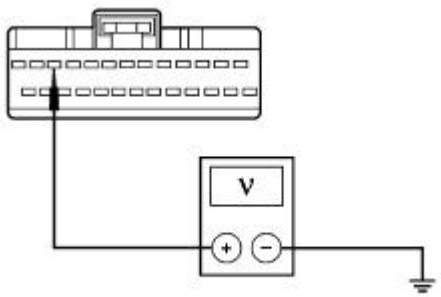
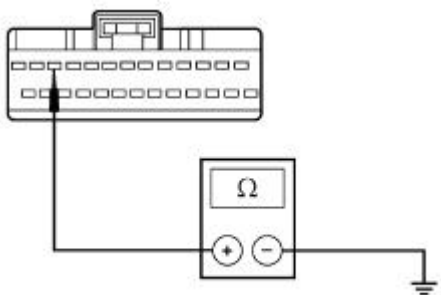
Circuit 599 (PK/LG), harness side and ground.  GN3161-A ● **Is the resistance greater than 10,000 ohms?**	GO to D11 . **No** REPAIR Circuit 599 (PK/LG). REPEAT the self-test. CLEAR the DTCs.
D11 CHECK CIRCUIT 599 (PK/LG) FOR OPEN	
● Measure the resistance between GEM C201c Pin 25, Circuit 599 (PK/LG), harness side and luggage compartment lid release relay Pin 1, Circuit 599 (PK/LG), harness side.  GN3162-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 599 (PK/LG). REPEAT the self-test. CLEAR the DTCs.
D12 CHECK CIRCUIT 84 (VT/YE) FOR SHORT TO POWER	
● Disconnect: GEM C201c. ● Measure the voltage between luggage compartment lid release relay Pin 3, Circuit 84 (VT/YE), harness side and ground.  GN1456-A ● **Is the voltage greater than 10 volts?**	**Yes** REPAIR Circuit 84 (VT/YE). REPEAT the self-test. CLEAR the DTCs. **No** GO to D13 .
D13 CHECK CIRCUIT 84 (VT/YE) FOR OPEN	
● Disconnect: Luggage Compartment Lid Release Solenoid C430. ● Measure the resistance between luggage compartment lid release relay Pin 3, Circuit 84 (VT/YE), harness side and luggage compartment lid release solenoid C430 Pin 2, Circuit 84 (VT/YE), harness side.	**Yes** GO to D14 . **No** REPAIR Circuit 84 (VT/YE). REPEAT the self-test. CLEAR the DTCs.

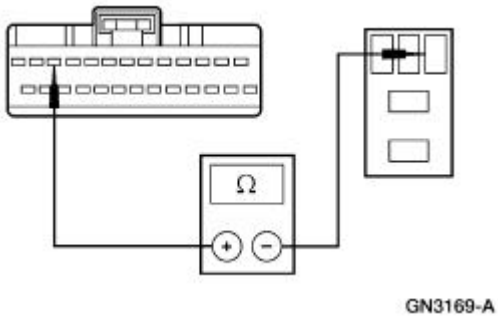
 GN3163-A ● **Is the resistance less than 5 ohms?**	
D14 CHECK CIRCUIT 1205 (BK) FOR OPEN	**Yes** INSTALL a new luggage compartment lid release switch. REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 1205 (BK). REPEAT the self-test. CLEAR the DTCs.
● Measure the resistance between luggage compartment lid release solenoid C430 Pin 1, Circuit 1205 (BK), harness side and ground.  GN2312-A ● **Is the resistance less than 5 ohms?**	

PINPOINT TEST E: PANIC FUNCTION DOES NOT OPERATE CORRECTLY

Test Step	Result / Action to Take
E1 CHECK IGNITION STATES	**Yes** GO to E2 . **No** REFER to Section 413-09 .
● Connect the diagnostic tool. ● Monitor the GEM PIDS IGN_KEY, IGN_A, IGN_S, and IGN_R while cycling the ignition switch through the OFF, ACC, RUN, START and key out positions. ● **Do the PID values agree with the ignition switch positions?**	
E2 CHECK THE GEM PID LAST DATA RECEIVED FOR PANIC	**Yes** GO to E3 . **No** GO to Pinpoint Test D .
● Remove the ignition key from the ignition. ● Connect the diagnostic tool. ● Monitor the GEM PID LAST DATA RECEIVED while pressing and releasing the luggage compartment, panic, lock, and unlock buttons of the remote transmitter. ● **Does LAST DATA RECEIVED match the button presses of the remote transmitter?**	
E3 CHECK THE COURTESY LAMPS	**Yes** GO to E4 . **No** REFER to Section 417-02 . TEST the system for
● Connect the diagnostic tool. ● Trigger the GEM active command COURTESYL ON and OFF. ● **Do the courtesy lamps illuminate and turn off?**	

	normal operation.
E4 CHECK THE GEM OUTPUT TO THE HORN ● Connect the diagnostic tool. ● Trigger the GEM active command HORN ON and OFF. ● **Did the horn sound and turn off?**	**Yes** GO to E5 . **No** GO to E6 .
E5 CHECK THE GEM OUTPUT TO THE PARKING LAMPS ● Connect the diagnostic tool. ● Trigger the GEM active command PARKLAMPS ON and OFF. ● **Did the parking lamps illuminate and turn off?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** GO to E10 .
E6 CHECK CIRCUIT 6 (YE/LG) FOR SHORT TO POWER ● Disconnect: Horn Relay. ● Disconnect: GEM C201c. ● Measure the voltage between GEM C201c Pin 12, Circuit 6 (YE/LG), harness side and ground.  GN3164-A ● **Is the voltage greater than 10 volts?**	**Yes** GO to E7 . **No** REPAIR Circuit 6 (YE/LG). REPEAT the self-test. CLEAR the DTCs.
E7 CHECK CIRCUIT 6 (YE/LG) FOR SHORT TO GROUND ● Measure the resistance between GEM C201c Pin 12, Circuit 6 (YE/LG), harness side and ground.  GN3165-A ● **Is the resistance greater than 10,000 ohms?**	**Yes** GO to E8 . **No** REPAIR Circuit 6 (YE/LG). REPEAT the self-test. CLEAR the DTCs.
E8 CHECK CIRCUIT 6 (YE/LG) FOR OPEN ● Measure the resistance between GEM C201c Pin 12, Circuit 6 (YE/LG), harness side and horn relay Pin 1, Circuit 6 (YE/LG), harness side.	**Yes** GO to E9 . **No** REPAIR Circuit 6 (YE/LG). REPEAT the self-test. CLEAR the DTCs.

 GN3166-A ● **Is the resistance less than 5 ohms?**	
E9 CHECK THE HORN FOR NORMAL OPERATION ● Depress the steering wheel horn switch. ● **Did the horn sound?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REFER to Section 413-06 .
E10 CHECK CIRCUIT 1032 (WH/BK) FOR SHORT TO POWER ● Disconnect: Parking Lamp Relay. ● Disconnect: GEM C201e. ● Measure the voltage between GEM C201e Pin 11, Circuit 1032 (WH/BK), harness side and ground.  GN3167-A ● **Is the voltage greater than 10 volts?**	**Yes** GO to E11 . **No** REPAIR Circuit 1032 (WH/BK). REPEAT the self-test. CLEAR the DTCs.
E11 CHECK CIRCUIT 1032 (WH/BK) FOR SHORT TO GROUND ● Measure the resistance between GEM C201e Pin 11, Circuit 1032 (WH/BK), harness side and ground.  GN3168-A ● **Is the resistance greater than 10,000 ohms?**	**Yes** GO to E12 . **No** REPAIR Circuit 1032 (WH/BK). REPEAT the self-test. CLEAR the DTCs.
E12 CHECK CIRCUIT 1032 (WH/BK) FOR OPEN ● Measure the resistance between GEM C201e Pin 11, Circuit	**Yes**

1032 (WH/BK), harness side and parking lamp relay Pin 1, Circuit 1032 (WH/BK), harness side.  GN3169-A ● **Is the resistance less than 5 ohms?**	GO to E13 . **No** REPAIR Circuit 1032 (WH/BK). REPEAT the self-test. CLEAR the DTCs.
E13 CHECK THE PARKING LAMPS FOR NORMAL OPERATION	
● Turn the parking lamps on with the headlamp switch. ● **Did the parking lamps turn on and off with the headlamp switch?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REFER to Section 417-01 .

Programming —Keyless Entry Remote Transmitter

NOTE: All keyless entry remote transmitters (15K601) must be programmed at the same time.

NOTE: All previous transmitter identification codes (TIC's) will be erased when programming mode is entered.

NOTE: To program (or reprogram) the keyless entry remote transmitters into the generic electronic module (GEM)(14B204), perform the following steps.

1. Turn the ignition from OFF to RUN eight times within 10 seconds, ending in RUN. If the GEM has successfully entered program mode, it will lock and unlock all the doors.

2. **NOTE:** The first TIC must be entered within 7.5 seconds of entering the program mode and additional TICs must be entered within 7.5 seconds of the first TIC. The programming mode is exited whenever the timing constraints are not met.

   Press any button on a keyless entry remote transmitter, and the doors will lock and then unlock to confirm that each keyless entry remote transmitter has been programmed.

3. If the door locks do not respond for any keyless entry remote transmitter, wait for several seconds and press the button again.

4. Turn the ignition switch to the OFF position, or wait up to five minutes after step 1, to exit program mode. If a keyless entry remote transmitter has been programmed (or reprogrammed), the GEM will lock and unlock all the doors one last time.

Actuator

Removal and Installation

For additional information, refer to Section 501-14A .

Module —Generic Electronic (GEM)

Removal and Installation

For additional information, refer to Section 419-10 .

General Specifications

Item	Specification
RH wiper blade to top edge of cowl top vent panel	55-88mm (2.16-3.18 inches)
LH wiper blade to top edge of cowl top vent panel	56-80mm (2.20-3.14 inches)

Torque Specifications

Description	Nm	lb-ft	lb-in
Windshield wiper mounting arm and pivot shaft bolt.	15	11	—
Windshield wiper motor bolts.	15	11	—
Windshield washer fluid reservoir screw.	6	—	53
Battery Ground Cable	10	—	89

Wipers and Washers

The wiper and washer system consists of the following components:

- windshield wiper mounting arm and pivot shaft
- pivot arms
- windshield wiper blades
- windshield washer reservoir
- windshield washer pump
- windshield wiper motor
- generic electronic module (GEM)
- multi-function switch
- windshield washer nozzle and bracket

Wipers and Washers

Refer to Wiring Diagrams Cell 59 , Generic Electronic Module for schematic and connector information.

Refer to Wiring Diagrams Cell 81 , Interval Wiper/Washer for schematic and connector information.

Special Tool(s)

 ST1453-A	Alternator, Regulator, Battery and Starter Tester (ARBST) or equivalent 010-00725
 ST1137-A	73 Digital Multimeter or equivalent 105-R0051
 ST2332-A	Worldwide Diagnostic System (WDS) 418-F224 New Generation STAR (NGS) Tester 418-F052, or equivalent diagnostic tool

Principles of Operation

Multifunction Wipers

The front wiper/washer feature controls the speed of the front windshield wipers and the amount of washer fluid sprayed on the front windshield when requested by the customer. There are five (5) wiper modes: OFF, LOW, HIGH, INTERVAL, and WASH.

Wiper Motor Speeds HIGH and LOW

There are two wiper speeds, HIGH and LOW. When the GEM detects the ignition switch circuits are in the RUN or ACC states, and the GEM detects a high or low speed request from the wiper mode circuits, the GEM will activate the wiper ON and OFF and the wiper speed circuits accordingly.

Wiper Motor Speeds Interval

There are one to seven wiper speed intervals, ranging from 1.5 seconds to 20 seconds in delay time respectively, which can be selected. When the GEM detects the ignition switch circuits are in the RUN or ACC states, and the GEM detects an interval selection of 1 through 7 from the delay/wash circuits, the GEM will activate the wiper ON and OFF and the wiper speed circuits accordingly.

Washers

When the GEM detects the ignition switch circuits are in RUN or ACC states, and the GEM detects a WASH request from the wiper delay/wash circuits, the GEM will activate the washer pump relay circuit for as long as the request is present up to 10 seconds.

Activation of the washer pump when in INTERVAL or OFF is delayed until a wash request is active for a minimum amount of time. In this scenario, the wash request must be present continuously for at least 210 ms. This allows a wash request that is present for less than 210 ms, to provide additional functionality by initiating a single wipe, called "mist wipe". The mist wipe function is a single wipe at low speed without activating the washer motor.

When in LOW or HIGH, any WASH request, regardless of the length of time it is present, will activate the washer pump. When in INTERVAL or OFF mode, upon deactivation of the washer motor, this feature shall provide two wipes at low speed before returning to the INTERVAL or OFF state as defined by the inputs. These additional wipes are provided to clear residual washer fluid from the front windshield.

Inspection and Verification

1. Verify the customer concern by operating the wiper/washer system.

2. Visually inspect for obvious signs of mechanical and electrical damage.

Visual Inspection Chart

Mechanical	Electrical
● Hoses to windshield washer pump ● Wiper linkage	● CJB Fuse 39 (5A) ● CJB Fuse 26 (30A) ● Wiring harness ● Loose or corroded connector(s) ● Relays ● Motors ● Multifunction switch ● GEM

3. If the concern remains after the inspection, connect the diagnostic tool to the data link connector (DLC) located beneath the instrument panel and select the vehicle to be tested from the diagnostic tool menu. If diagnostic tool does not communicate with the vehicle:
    - Check that the program card is correctly installed.
    - Check the connections to the vehicle.
    - Check the ignition switch position.

4. If diagnostic tool still does not communicate with the vehicle, refer to the diagnostic tool manual.

5. Carry out the DATA LINK DIAGNOSTIC TEST. If diagnostic tool responds with:
    - CKT914, CKT915 or CKT70 = ALL ECUS NO RESP/NOT EQUIP, refer to Section 418-00.
    - NO RESPONSE/NOT EQUIPPED for GEM, go to Pinpoint Test A.
    - SYSTEM PASSED, retrieve and record the continuous diagnostic trouble codes (DTCs), erase the continuous DTCs and carry out self-test diagnostics for the GEM.

6. If the DTCs retrieved are related to the concern, go to GEM Diagnostic Trouble Code (DTC) Index to continue diagnostics.

7. If no DTCs related to the concern are retrieved, proceed to Symptom Chart to continue diagnostics.

GEM Diagnostic Trouble Code (DTC) Index

GEM Diagnostic Trouble Code (DTC) Index

DTC	Description	Source	Action
B1217	Horn Relay Coil Circuit Failure	GEM	REFER to Section 413-06 .
B1218	Horn Relay Coil Circuit Short to Vbatt	GEM	REFER to Section 413-06 .
B1312	Lamp Headlamp Input Circuit Short to Battery	GEM	REFER to Section 417-01 .
B1317	Battery Voltage High	GEM	REFER to Section 414-00 .
B1318	Battery Voltage Low	GEM	REFER to Section 414-00 .
B1322	Driver Door Ajar Circuit Short to Ground	GEM	REFER to Section 417-02 .
B1330	Passenger Door Ajar Circuit Short to Ground	GEM	REFER to Section 417-02 .
B1334	Decklid Ajar Rear Door Circuit Short to Ground	GEM	REFER to Section 417-02 .
B1339	Chime Input Request Circuit Short to Battery (FOJ)	GEM	REFER to Section 413-09 .
B1340	Chime Input Request Circuit Short to Ground	GEM	REFER to Section 413-09 .
B1342	ECU Is Defective	GEM	CLEAR the DTCs. Retrieve the DTCs. If DTC B1342 is retrieved, INSTALL a new GEM. REFER to Section 419-10 .
B1353	Ignition Key-In Circuit Open	GEM	REFER to Section 413-09 .
B1359	Ignition Run/Acc Circuit Failure	GEM	REFER to Section 211-05 .
B1396	Power Door Lock Circuit Short to Battery	GEM	REFER to Section 501-14B .
B1397	Power Door Unlock Circuit Short to Battery	GEM	REFER to Section 501-14B .
B1405	Driver Power Window Down Circuit Short to Battery	GEM	REFER to Section 501-11 .
B1408	Driver Power Window Up Circuit Short to Battery	GEM	REFER to Section 501-11 .
B1410	Driver Power Window Motor Circuit Failure	GEM	REFER to Section 501-11 .
B1426	Lamp Safety Belt Circuit Short to Battery	GEM	REFER to Section 413-01 .
B1428	Lamp Safety Belt Circuit Failure	GEM	REFER to Section 413-01 .
B1431	Wiper Brake/Run Relay Circuit Failure	GEM	GO to Pinpoint Test B .
B1432	Wiper Brake/Run Relay Circuit	GEM	GO to Pinpoint Test B .

	Short to Battery		
B1434	Wiper HIGH and LOW Speed Relay Coil Circuit Failure	GEM	GO to Pinpoint Test B .
B1436	Wiper HIGH and LOW Speed Relay Coil Circuit Short to Battery	GEM	GO to Pinpoint Test B .
B1438	Wiper Mode Select Switch Circuit Failure	GEM	GO to Pinpoint Test B .
B1441	Wiper Mode Select Switch Circuit Short to Ground	GEM	GO to Pinpoint Test B .
B1446	Wiper Park Sense Circuit Failure	GEM	GO to Pinpoint Test B .
B1448	Wiper Park Sense Circuit Short to Battery	GEM	GO to Pinpoint Test B .
B1450	Wiper Wash/Delay Switch Circuit Failure	GEM	GO to Pinpoint Test C .
B1453	Wiper Wash/Delay Switch Circuit Short to Ground	GEM	GO to Pinpoint Test C .
B1458	Wiper Washer Pump Motor Relay Circuit Failure	GEM	GO to Pinpoint Test C .
B1460	Wiper Washer Pump Motor Relay Coil Circuit Short to Battery	GEM	GO to Pinpoint Test C .
B1462	Safety Belt Switch Circuit Failure	GEM	REFER to Section 413-09 .
B1466	Wiper HIGH and LOW Speed Not Switching	GEM	GO to Pinpoint Test B .
B1473	Wiper Low Speed Circuit Motor Failure	GEM	GO to Pinpoint Test B .
B1476	Wiper High Speed Circuit Motor Failure	GEM	GO to Pinpoint Test B .
B1551	Decklid Release Circuit Failure	GEM	REFER to Section 501-14B .
B1553	Decklid Release Circuit Short to Battery	GEM	REFER to Section 501-14B .
B1555	Ignition Run/Start Circuit Failure	GEM	REFER to Section 211-05 .
B1687	Lamp Dome Input Circuit Short to Battery	GEM	REFER to Section 417-02 .
B2486	LF Side Repeater Lamp Output Circuit Failure	GEM	REFER to Section 417-01 .
B2488	RF Side Repeater Lamp Output Circuit Failure	GEM	REFER to Section 417-01 .
C1189	Brake Fluid Level Sensor Input Short Circuit to Ground	GEM	REFER to Section 413-01 .
C1223	Lamp Brake Warning Output Circuit Failure	GEM	REFER to Section 413-01 .
C1225	Lamp Brake Warning Output Circuit Short to Battery	GEM	REFER to Section 413-01 .

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
• No communication with the generic electronic module	• CJB Fuse 39 (5A). • Circuitry. • GEM.	• GO to Pinpoint Test A.
• The wipers are inoperative	• CJB Fuse 26 (30A). • Ignition switch. • Circuitry. • GEM. • Multifunction switch (13K359). • Wiper ON/OFF relay. • Wiper HIGH/LOW relay. • Wiper motor.	• GO to Pinpoint Test B.
• The wipers stay on continuously	• Circuitry. • GEM. • Multifunction switch. • Wiper ON/OFF relay. • Wiper HIGH/LOW relay. • Wiper motor.	• GO to Pinpoint Test B.
• The HIGH and LOW wiper speeds do not operate correctly	• Circuitry. • GEM. • Multifunction switch. • Wiper HIGH/LOW relay. • Wiper motor. • DTC B1434.	• GO to Pinpoint Test B.
• The intermittent wiper mode does not operate correctly	• Circuitry. • GEM. • Multifunction switch. • Wiper motor.	• GO to Pinpoint Test B.
• The washer pump is inoperative	• CJB Fuse 26 (30A). • Circuitry. • GEM. • Multifunction switch. • Washer pump relay. • Washer pump. • Ignition switch.	• GO to Pinpoint Test C.
• The low wiper speed does not operate correctly	• Circuitry. • Multifunction switch. • Wiper HIGH/LOW relay. • Wiper motor. • GEM. • DTC B1473. • DTC B1434.	• GO to Pinpoint Test B.

Pinpoint Tests

CAUTION: Before removing and installing the GEM or its connectors, disconnect the battery. Failure to follow this caution will result in the GEM storing many erroneous DTCs and it may exhibit erratic operation after installation.

CAUTION: Be careful when probing the central junction box (CJB), battery junction box (BJB) or any connectors. Damage will result to the connector receptacle if the probe being used is too large.

CAUTION: Electronic modules are sensitive to static electrical charges. If exposed to these charges, damage may result.

NOTE: If continuous DTCs are recorded and the symptom is not present when carrying out the pinpoint tests, an intermittent concern may be the cause. Always check for loose connections and corroded terminals.

NOTE: Complete the entire pinpoint test related to the symptom before installing a new GEM.

PINPOINT TEST A: NO COMMUNICATION WITH THE GENERIC ELECTRONIC MODULE (GEM)

<table>
<tr><th>Test Step</th><th>Result / Action to Take</th></tr>
<tr><td colspan="2">CAUTION: Use the correct probe adapter(s) when making measurements. Failure to use the correct probe adapter(s) may damage the connector.</td></tr>
<tr><td>A1 CHECK THE GENERIC ELECTRONIC MODULE (GEM) POWER SUPPLY</td><td rowspan="2">Yes
GO to A2 .

No
REPAIR the circuit(s) in question. TEST the system for normal operation.</td></tr>
<tr><td>

Key in OFF position.
Disconnect: Generic Electronic Module (GEM) C201a.
Disconnect: GEM C201b.
Key in ON position.
Using the following table. measure the voltage between the GEM, harness side and ground.

<table>
<tr><th>Connector</th><th>Pin</th><th>Circuit</th></tr>
<tr><td>C201a</td><td>4</td><td>400 (LB/BK)</td></tr>
<tr><td>C201a</td><td>1</td><td>1006 (DG/WH)</td></tr>
<tr><td>C201b</td><td>2</td><td>1001 (WH/YE)</td></tr>
<tr><td>C201b</td><td>3</td><td>193 (YE/LG)</td></tr>
</table>

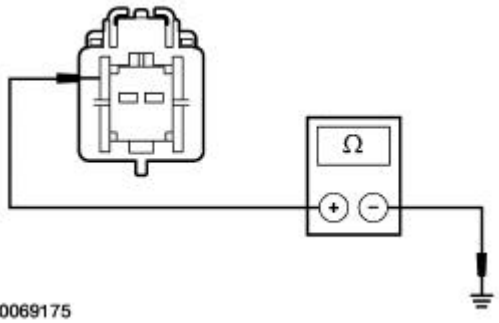
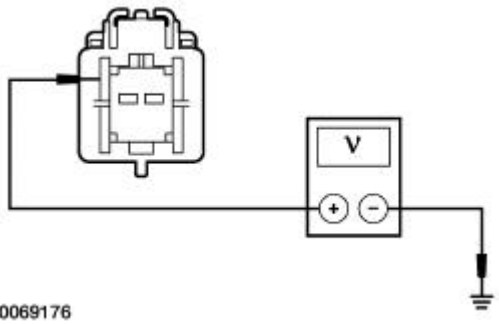
Are the voltages greater than 10 volts?

</td></tr>
<tr><td>A2 CHECK THE GEM GROUND CIRCUIT 397 (BK/WH) FOR OPEN</td><td rowspan="2">Yes
GO to A3 .

No
REPAIR the cirucit(s) in question. TEST the system</td></tr>
<tr><td>

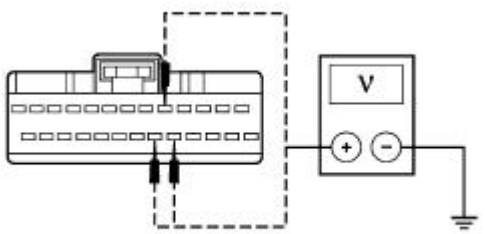
Key in OFF position.
Measure the resistance between the GEM C201b pin 4, circuit 397 (BK/WH), harness side and ground.

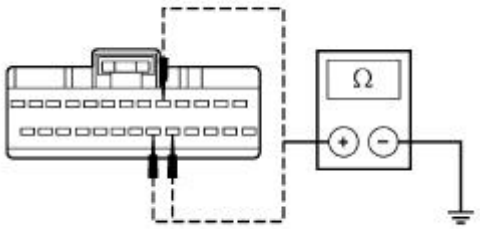
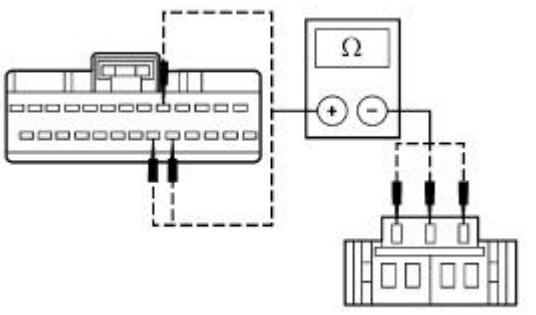
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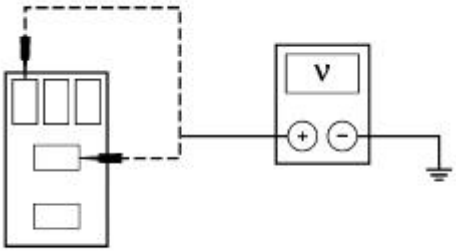
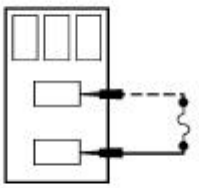
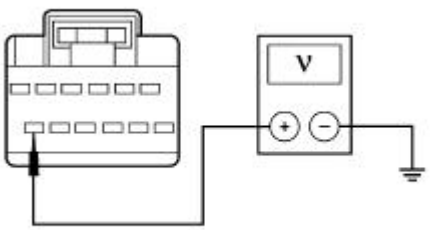
 A0069175 ● **Is the resistance less than 5 ohms?**	for normal operation.
A3 CHECK CIRCUIT 397 (BK/WH) FOR SHORT TO POWER	
● Measure the voltage between the GEM C201b pin 4, circuit 397 (BK/WH), harness side and ground.  A0069176 ● **Is any voltage present?**	**Yes** REPAIR the circuit. TEST the system for normal operation. **No** REFER to Section 418-00 .

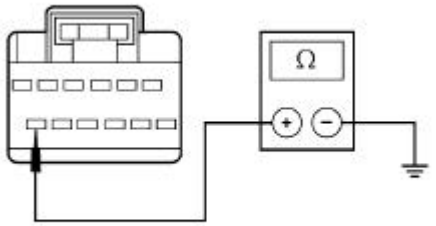
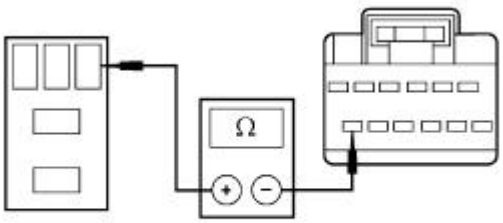
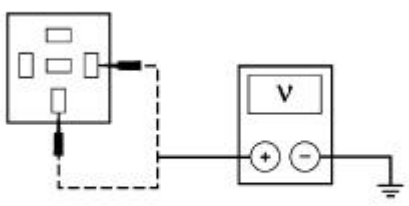
PINPOINT TEST B: WINDSHIELD WIPERS DO NOT OPERATE / OPERATE CORRECTLY

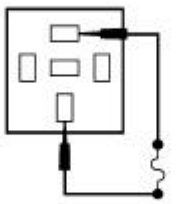
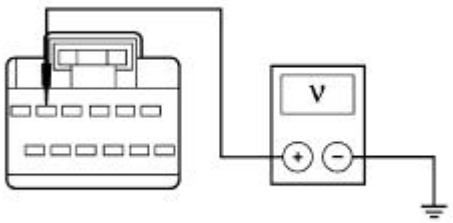
Test Step	Result / Action to Take
B1 DETERMINE IF GEM IS RECEIVING CORRECT IGNITION SWITCH STATUS	
● Key in OFF position. ● Connect the diagnostic tool. ● **NOTE:** If the vehicle is equipped with a manual transmission, depress the clutch while turning the ignition switch to START. ● Monitor the GEM PIDs IGN_S, IGN_R IGN_A, and IGN_KEY while turning the ignition switch through the START, RUN, OFF and ACC positions. ● **Do the GEM PID values agree with the ignition switch positions?**	**Yes** GO to B2 . **No** REFER to Section 413-09 .
B2 DETERMINE IF GEM IS RECEIVING CORRECT WIPER SWITCH STATUS FROM MULTIFUNCTION SWITCH	
● Key in ON position. ● Monitor PID WPMODE, while moving through all wiper control positions on the multifunction switch. ● **Do the GEM PID values agree with switch positions?**	**Yes** GO to B3 . **No** GO to B6 .
B3 TEST GEM CONTROL OF WIPER ON/OFF RELAY	
● Trigger the GEM active command WIPER RLY ON and OFF. ● **Do the wipers turn ON and OFF?**	**Yes** GO to B4 .

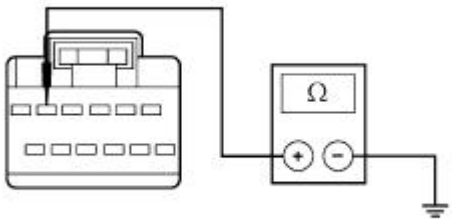
	No GO to B10 .
B4 TEST THE GEM CONTROL OF WIPER HIGH/LOW RELAY ● Trigger the GEM active command WIPER RLY to ON. ● Trigger the GEM active command SPEED RLY ON and OFF. ● **Does wiper speed change on activation and deactivation of SPEED RLY command?**	**Yes** GO to B5 . **No** GO to B16 .
B5 DETERMINE IF GEM IS RECEIVING CORRECT WIPER POSITION STATUS ● Monitor GEM PID WPPRKSW while turning the wipers ON using the multifunction switch. ● **Do the PID values agree with the wiper position?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . CLEAR the DTCs. REPEAT the self-test. **No** GO to B27 .
B6 TEST THE MULTIFUNCTION SWITCH FOR NORMAL OPERATION ● Disconnect: Multifunction Switch C202a. ● Check the multifunction switch. Refer to Wiring Diagrams, Cell 149, Component Testing. ● **Is the multifunction switch OK?**	**Yes** GO to B7 . **No** INSTALL a new multifunction switch; REFER to Section 211-05 . REPEAT the self-test. CLEAR the DTCs.
B7 CHECK CIRCUITS 682 (DB), 684 (PK/YE), AND 680 (LB/OG) FOR SHORT TO BATTERY BETWEEN THE GEM AND THE MULTIFUNCTION SWITCH ● Disconnect: GEM C201e. ● Key in ON position. ● Using the following table, measure the voltage between the GEM C201e Pins, harness side and ground. **Pin** / **Circuit** 5 — 682 (DB) 18 — 684 (PK/YE) 19 — 680 (LB/OG)  GK9940-A ● **Are the voltages greater than 10 volts?**	**Yes** REPAIR the circuit(s) in question. REPEAT the self-test. CLEAR the DTCs. **No** GO to B8 .
B8 CHECK CIRCUITS 682 (DB), 684 (PK/YE), AND 680	

(LB/OG) FOR SHORT TO GROUND BETWEEN THE GEM AND THE MULTIFUNCTION SWITCH	
• Key in OFF position. • Using the following table, measure the resistance between the GEM C201e Pins, harness side and ground. **Pin** / **Circuit** 5 — 682 (DB) 18 — 684 (PK/YE) 19 — 680 (LB/OG)  GK9941-A • **Are the resistances greater than 10,000 ohms?**	**Yes** REPAIR the circuit(s) in question. REPEAT the self-test. CLEAR the DTCs. **No** GO to B9 .
B9 CHECK CIRCUITS 682 (DB), 684 (PK/YE), AND 680 (LB/OG) FOR AN OPEN CONDITION BETWEEN GEM AND MULTIFUNCTION SWITCH	
• Using the following table, measure the resistance between the GEM C201e Pins, harness side and multifunction switch C202a Pins, harness side. **GEM** / **Multifunction Switch** / **Circuit** C260 Pin 5 — C202a Pin 685 — 682 (DB) C260 Pin 18 — C202a Pin 590 — 684 (PK/YE) C260 Pin 19 — C202a Pin 993 — 680 (LB/OG)  GK9942-A • **Are the resistances less than 5 ohms?**	**Yes** INSTALL a new GEM. For additional information, REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR circuit(s) in question. REPEAT the self-test. CLEAR the DTCs.
B10 CHECK CIRCUITS 65 (DG) FOR OPEN CIRCUIT CONDITION BETWEEN BJB AND CJB	
NOTE: Verify voltage at CJB F26 (30A) before carrying out this test. • Disconnect: Wiper On/Off Relay. • Measure the voltage between BJB ON and OFF wiper	**Yes** GO to B11 . **No**

relay Pin 5, Circuit 65 (DG), harness side and ground; and between BJB wiper ON/OFF relay Pin 2, Circuit 65 (DG), harness side and ground.  GK9943-A ● **Are the voltages greater than 10 volts?**	REPAIR circuit(s) in question. REPEAT the self-test. CLEAR the DTCs.
B11 ISOLATE PROBLEM BETWEEN GEM AND BJB ● Key in OFF position. ● Connect a fused jumper wire (30A) between wiper ON/OFF relay Pin 3 and Pin 5, harness side.  GK9944-B ● Key in ON position. ● **Did the wiper motor activate?**	**Yes** GO to B12 . **No** GO to B22 .
B12 CARRY OUT THE WIPER ON/OFF RELAY COMPONENT TEST ● Check the wiper ON and OFF relay; refer to Wiring Diagrams, Cell 149, Component Testing. ● **Is the ON/OFF wiper relay OK?**	**Yes** GO to B13 . **No** INSTALL a new wiper ON/OFF relay. REPEAT the self-test. CLEAR the DTCs.
B13 CHECK CIRCUIT 646 (YE/WH) FOR SHORT TO BATTERY BETWEEN GEM AND BJB ● Disconnect: Wiper On/Off Relay. ● Disconnect: GEM C201d. ● Measure the voltage between GEM C201d 3 Pin 12, Circuit 646 (YE/WH), harness side and ground.  GK9945-A	**Yes** REPAIR Circuit 646 (YE/WH). REPEAT the self-test. CLEAR the DTCs. **No** GO to B14 .

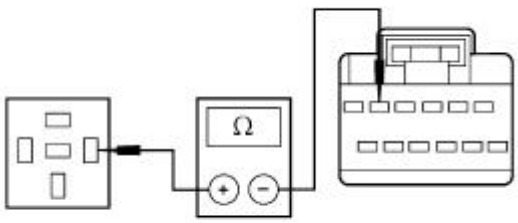
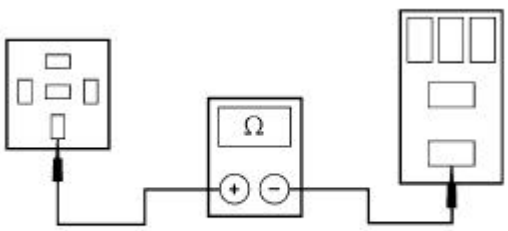
• **Is the voltage greater than 10 volts?**	
B14 CHECK CIRCUIT 646 (YE/WH) FOR SHORT TO GROUND BETWEEN GEM AND BJB	
• Measure the resistance between GEM C201d Pin 12, Circuit 646 (YE/WH), harness side and ground.  GK9946-A • **Is the resistance greater than 10,000 ohms?**	**Yes** GO to B15 . **No** REPAIR Circuit 646 (YE/WH). REPEAT the self-test. CLEAR the DTCs.
B15 CHECK CIRCUIT 646 (YE/WH) FOR OPEN BETWEEN GEM AND BJB	
• Measure the resistance between GEM C201d Pin 12, Circuit 646 (YE/WH), harness side and BJB wiper ON/OFF relay Pin 1, Circuit 646 (YE/WH), harness side.  GK9947-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new GEM. For additional information REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 646 (YE/WH). REPEAT the self-test. CLEAR the DTCs.
B16 CHECK CIRCUITS 65 (DG) AND 61 (YE/RD) FOR OPEN CONDITION BETWEEN BJB AND CJB	
• Disconnect: Wiper HIGH/LOW Relay. • Trigger the GEM active command WIPER RLY to ON. • Measure the voltages between BJB wiper HIGH/LOW relay Pin 86, Circuit 65 (DG), harness side and ground; and between BJB wiper HIGH/LOW relay Pin 30, Circuit 61 (YE/RD), harness side and ground.  GK9948-A • **Are the voltages greater than 10 volts?**	**Yes** GO to B17 . **No** REPAIR circuit in question. REPEAT the self-test. CLEAR the DTCs.
B17 ISOLATE THE PROBLEM BETWEEN THE GEM AND THE BJB	
• Trigger the GEM active command WIPER RLY to ON.	**Yes**

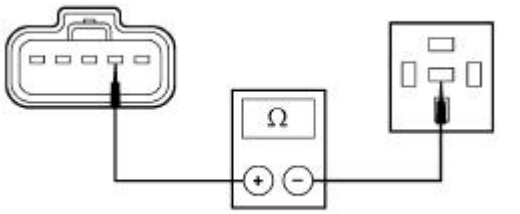
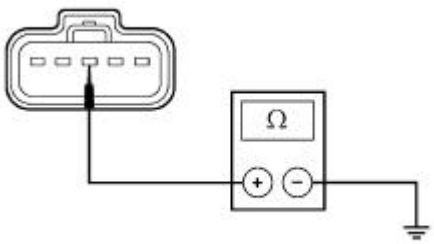
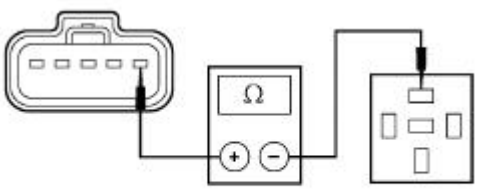
• Connect a fused jumper wire (30A) between wiper HIGH/LOW relay Pin 30, Circuit 61 (YE/RD), harness side and Pin 87, Circuit 58 (WH), harness side.  GK9949-B • **Did the wiper motor speed increase with the jumper installed and slow down with the jumper removed?**	GO to B18 . **No** GO to B26 .
B18 CARRY OUT COMPONENT TEST ON WIPER HIGH/LOW RELAY	
• Check the wiper HIGH/LOW relay; refer to Wiring Diagrams, Cell 149, Component Testing. • **Is the wiper HIGH/LOW relay OK?**	**Yes** GO to B19 . **No** INSTALL a new wiper HIGH/LOW relay. REPEAT the self-test. CLEAR the DTCs.
B19 CHECK CIRCUIT 647 (GY/LB) FOR SHORT TO BATTERY BETWEEN GEM AND BJB	
• Disconnect: GEM C201d. • Measure voltage between GEM C201d Pin 5, Circuit 647 (GY/LB), harness side and ground.  GK9950-A • **Is the voltage greater than 10 volts?**	**Yes** REPAIR Circuit 647 (GY/LB). REPEAT the self-test. CLEAR the DTCs. **No** GO to B20 .
B20 CHECK CIRCUIT 647 (GY/LB) FOR SHORT TO GROUND BETWEEN GEM AND BJB	
• Measure the resistance between GEM C201d Pin 5, Circuit 647 (GY/LB), harness side and ground.	**Yes** GO to B21 . **No** REPAIR Circuit 647 (GY/LB). REPEAT the self-test. CLEAR the DTCs.

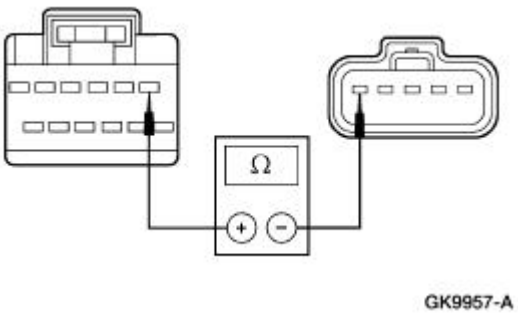


GK9951-A

- **Is the resistance greater than 10,000 ohms?**

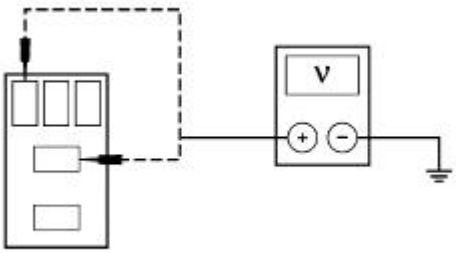
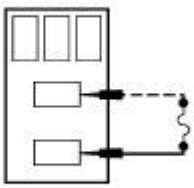
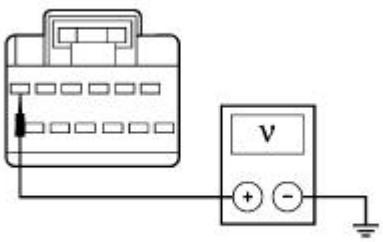
B21 CHECK CIRCUIT 647 (GY/LB) FOR OPEN CONDITION BETWEEN GEM AND BJB	
• Measure the resistance between GEM C201d Pin 5, Circuit 647 (GY/LB), harness side and wiper HIGH/LOW relay Pin 85, Circuit 647 (GY/LB), harness side.  GK9952-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new GEM. REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 647 (GY/LB). REPEAT the self-test. CLEAR the DTCs.
B22 CHECK CIRCUIT 61 (YE/RD) FOR OPEN CIRCUIT CONDITION BETWEEN WIPER ON/OFF AND HIGH/LOW RELAYS	
• Disconnect: Wiper HIGH/LOW Relay. • Disconnect: Wiper ON/OFF Relay. • Measure the resistance between wiper ON/OFF relay Pin 3, Circuit 61 (YE/RD), harness side and wiper HIGH/LOW relay Pin 30, Circuit 61 (YE/RD), harness side.  GK9953-A • **Is the resistance less than 5 ohms?**	**Yes** GO to B23 . **No** REPAIR Circuit 61 (YE/RD). REPEAT the self-test. CLEAR the DTCs.
B23 CARRY OUT THE WIPER HIGH/LOW RELAY COMPONENT TEST	
• Check the wiper HIGH/LOW relay; refer to Wiring Diagrams, Cell 149, Component Testing. • **Is the wiper HIGH/LOW relay OK?**	**Yes** GO to B24 . **No** INSTALL a new wiper HIGH/LOW relay. REPEAT the self-test. CLEAR the

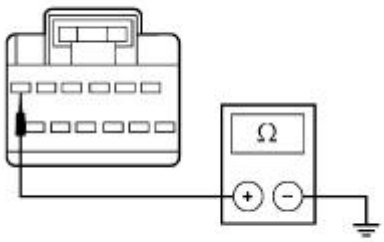
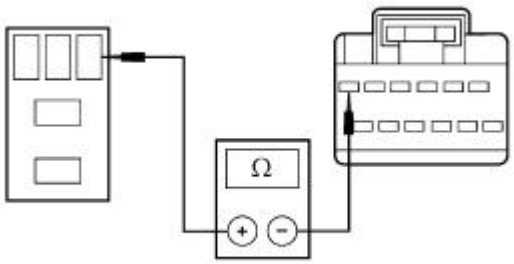
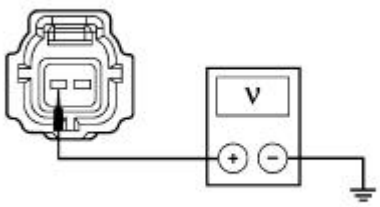
	DTCs.
B24 CHECK CIRCUIT 56 (DB/OG) FOR AN OPEN CIRCUIT BETWEEN THE WIPER HIGH/LOW RELAY AND THE WIPER MOTOR	
• Disconnect: Wiper Motor C125. • Measure the resistance between wiper HIGH/LOW relay Pin 87A, Circuit 56 (DB/OG), harness side and wiper motor C125 Pin 4, Circuit 56 (DB/OG), harness side.  GK9954-A • **Is the resistance less than 5 ohms?**	**Yes** GO to B25 . **No** REPAIR Circuit 56 (DB/OG). REPEAT the self-test. CLEAR the DTCs.
B25 CHECK CIRCUIT 1205 (BK) FOR OPEN CIRCUIT CONDITION BETWEEN WIPER MOTOR AND GROUND	
• Measure the resistance between wiper motor C125 Pin 3, Circuit 1205 (BK), harness side and ground.  GK9955-A • **Is the resistance less than 5 ohms?**	**Yes** CARRY OUT the windshield wiper motor component test. REFER to Component Test. If the component fails, INSTALL a new wiper motor; REFER to Motor—Windshield Wiper . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 1205 (BK). REPEAT the self-test. CLEAR the DTCs.
B26 CHECK CIRCUIT 58 (WH) FOR AN OPEN CIRCUIT BETWEEN THE WIPER HIGH/LOW RELAY AND THE WIPER MOTOR	
• Disconnect: Wiper Motor C125. • Measure the resistance between wiper motor C125 Pin 5, Circuit 58 (WH), harness side and wiper HIGH/LOW relay Pin 87, Circuit 58 (WH), harness side.  GA5943-A • **Is the resistance less than 5 ohms?**	**Yes** CARRY OUT the windshield wiper motor component test. REFER to Component Test. If the component fails, INSTALL a new wiper motor; REFER to Motor—Windshield Wiper . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 58 (WH). REPEAT the self-test. CLEAR the DTCs.
B27 CHECK CIRCUIT 28 (BK/PK) FOR OPEN CIRCUIT CONDITION BETWEEN THE WIPER HIGH/LOW RELAY AND THE WIPER MOTOR	

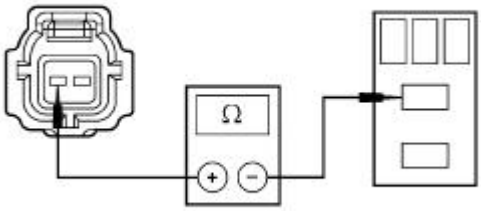
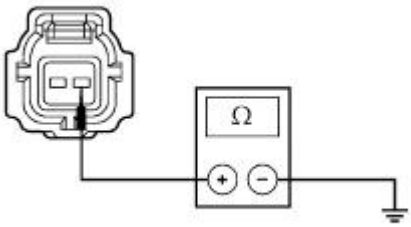
• Disconnect: Wiper Motor C125. • Disconnect: GEM C201d. • Measure the resistance between wiper motor C125 Pin 1, Circuit 28 (BK/PK), harness side and GEM C201d Pin 1, Circuit 58 (WH), harness side.  GK9957-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new wiper motor; REFER to Motor—Windshield Wiper . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 28 (BK/PK). REPEAT the self-test. CLEAR the DTCs.

PINPOINT TEST C: WINDSHIELD WASHERS DO NOT OPERATE / OPERATE CORRECTLY

Test Step	Result / Action to Take
C1 DETERMINE IF GEM IS RECEIVING CORRECT IGNITION SWITCH STATUS	
• Key in OFF position. • Connect the diagnostic tool. • **NOTE:** If the vehicle is equipped with a manual transmission, depress the clutch while turning the ignition switch to START. • Monitor the GEM PIDs IGN_S, IGN_R IGN_A, and IGN_KEY while turning the ignition switch through the START, RUN, OFF and ACC positions. • **Do the GEM PID values agree with the ignition switch positions?**	**Yes** GO to C2 . **No** REFER to Section 413-09 .
C2 DETERMINE IF GEM IS RECEIVING CORRECT WIPER SWITCH STATUS FROM MULTIFUNCTION SWITCH	
• Key in ON position. • Monitor GEM PID WPMODE while activating all wiper control positions on the multifunction switch. • **Does the GEM PID values agree with switch positions?**	**Yes** GO to C3 . **No** GO to Pinpoint Test B .
C3 CHECK GEM CONTROL OF THE WASHER ON/OFF RELAY	
• Trigger GEM active command WASH RLY ON and OFF. • **Do washers turn ON and OFF?**	**Yes** INSTALL a new GEM; REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** GO to C4 .
C4 CHECK CIRCUIT 65 (DG) FOR OPEN CIRCUIT BETWEEN CJB AND WASHER ON/OFF RELAY	
NOTE: Verify voltage at CJB F26 (30A) before carrying out this	**Yes**

test. ● Disconnect: Washer ON/OFF Relay. ● Measure the voltage between washer ON/OFF relay Pin 2, Circuit 65 (DG), harness side and ground; and washer ON/OFF relay Pin 3, Circuit 65 (DG), harness side and ground.  GK9943-A ● **Are the voltages greater than 10 volts?**	GO to C5 . **No** REPAIR the circuit in question. REPEAT the self-test. CLEAR the DTCs.
C5 ISOLATE THE PROBLEM BETWEEN GEM AND BJB	
● Connect a fused jumper wire (30A) between washer ON/OFF relay Pin 3, Circuit 65 (DG), harness side and Pin 5, Circuit 941 (BK/WH), harness side.  GK9944-B ● **Did the washer motor activate?**	**Yes** GO to C6 . **No** GO to C10 .
C6 CARRY OUT WASHER ON/OFF RELAY COMPONENT TEST	
● Check the washer ON/OFF relay; refer to Wiring Diagrams, Cell 149, Component Testing. ● **Is the washer ON/OFF relay OK?**	**Yes** GO to C7 . **No** INSTALL a new wiper ON/OFF relay. REPEAT the self-test. CLEAR the DTCs.
C7 CHECK CIRCUIT 686 (TN/RD) FOR SHORT TO BATTERY BETWEEN GEM AND BJB	
● Disconnect: GEM C201d. ● Measure the voltage between GEM C201d Pin 6, Circuit 686 (TN/RD), harness side and ground.  GK9958-A	**Yes** REPAIR Circuit 686 (TN/RD). REPEAT the self-test. CLEAR the DTCs. **No** GO to C8 .

• **Is the voltage greater than 10 volts?**	
C8 CHECK CIRCUIT 686 (TN/RD) FOR SHORT TO GROUND BETWEEN GEM AND BJB	
• Measure the resistance between GEM C201d Pin 6, Circuit 686 (TN/RD), harness side and ground.  GK9959-A • **Is the resistance greater than 10,000 ohms?**	**Yes** GO to C9 . **No** REPAIR Circuit 686 (TN/RD). REPEAT the self-test. CLEAR the DTCs.
C9 CHECK CIRCUIT 686 (TN/RD) FOR AN OPEN CIRCUIT BETWEEN GEM AND WASHER ON/OFF RELAY	
• Measure the resistance between GEM C201d Pin 6, Circuit 686 (TN/RD), harness side and washer ON/OFF relay Pin 1, Circuit 686 (TN/RD), harness side.  GK9960-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new GEM; REFER to Section 419-10 . REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 686 (TN/RD). REPEAT the self-test. CLEAR the DTCs.
C10 CHECK CIRCUIT 941 (BK/WH) FOR SHORT TO BATTERY BETWEEN BJB AND WASHER MOTOR	
• Disconnect: Washer Pump Motor C137. • Measure the voltage between washer pump C137 Pin 1, Circuit 941 (BK/WH), harness side and ground.  GK9961-A • **Is the voltage greater than 10 volts?**	**Yes** REPAIR Circuit 941 (BK/WH). REPEAT the self-test. CLEAR the DTCs. **No** GO to C11 .
C11 CHECK CIRCUIT 941 (BK/WH)FOR OPEN BETWEEN THE BJB AND THE WASHER MOTOR	
• Measure the resistance between washer pump C137 Pin 1, Circuit 941 (BK/WH), harness side and washer pump relay Pin 5, Circuit 941 (BK/WH), harness side.	**Yes** GO to C12 . **No**

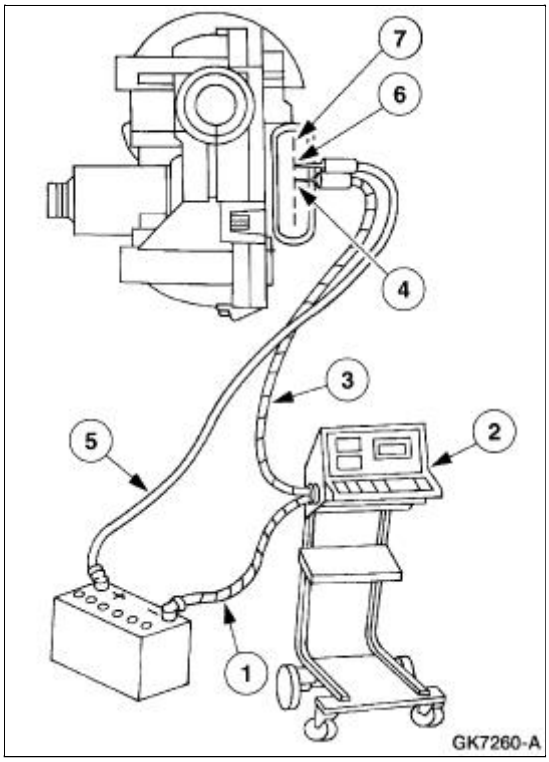
 GK9962-A ● **Is the resistance less than 5 ohms?**	REPAIR Circuit 941 (BK/WH). REPEAT the self-test. CLEAR the DTCs.
C12 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
● Measure the resistance between washer pump C137 Pin 2, Circuit 1205 (BK), harness side and ground.  GK9963-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new washer motor. REPEAT the self-test. CLEAR the DTCs. **No** REPAIR Circuit 1205 (BK). REPEAT the self-test. CLEAR the DTCs.

Component Test

Windshield Wiper Motor

CAUTION: Do not handle the wiper motor abusively when diagnosing the wiper operations. Failure to follow this caution may result in damage to the motor magnets and will make the wiper motor inoperative. Rough handling of new replacement wiper motors may also damage the motor magnets.

Use Alternator, Regulator, Battery and Starter Tester (ARBST) to test the wiper motor on the vehicle.



To test the wiper motor, disconnect the windshield wiper mounting arm and pivot shaft from the windshield wiper motor; refer to Pivot Arm .

Disconnect the wiper motor. Connect the (1) green lead from (2) (ARBST) to the battery negative (-) post. Connect the (3) red lead from ARBST to the wiper motor (4) common brush terminal (terminal 3).

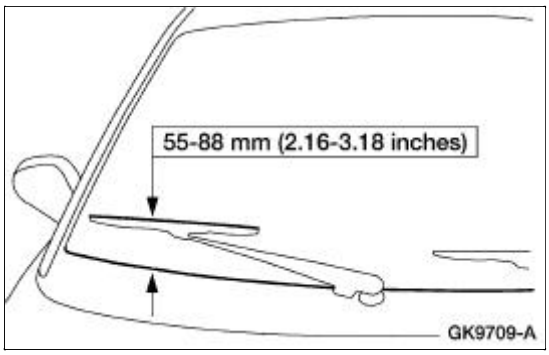
Test the low speed mode by connecting a (5) cable from the battery positive (+) post to the (6) low speed brush terminal (terminal 4) and measure the current draw. If the current draw is greater than 3.5 amperes, install a new windshield wiper motor.

Test the high speed mode by connecting a cable from the battery positive (+) post to the (7) high speed brush terminal (terminal 5) and measure the current draw. If the current draw is greater than 5.5 amperes, install a new wiper motor.

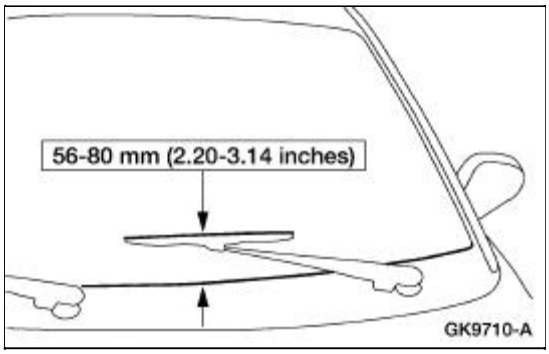
Wiper Blade and Pivot Arm Adjustment

1. Cycle and park the windshield wipers.

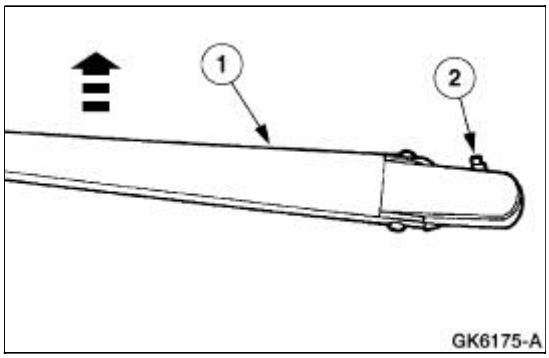
2. Verify that the distance between the center of the RH windshield wiper blade and the top edge of the cowl top vent panel is within specification.



3. Verify that the distance between the center of the LH windshield wiper blade and the top edge of the cowl top vent panel is within specification.



4. If the distance is not within specification, remove the windshield wiper pivot arms and reposition to specification.
   Remove the pivot arm.
   1. Pull up on the pivot arm.
   2. Pull out on the retainer tab and remove the pivot arm.

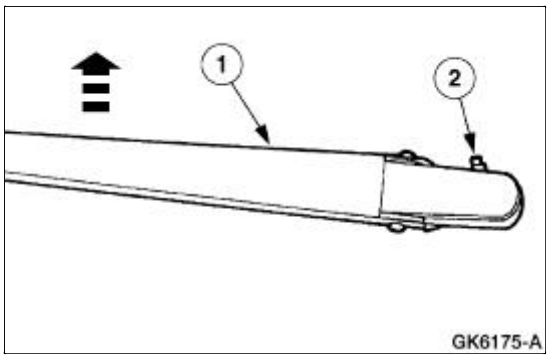


Pivot Arm

Removal

1. **NOTE:** New windshield wiper pivot arms need to be installed as an assembly.

   Remove the pivot arm.
   1. Pull up on the pivot arm.
   2. Pull out on the retainer tab and remove the pivot arm.



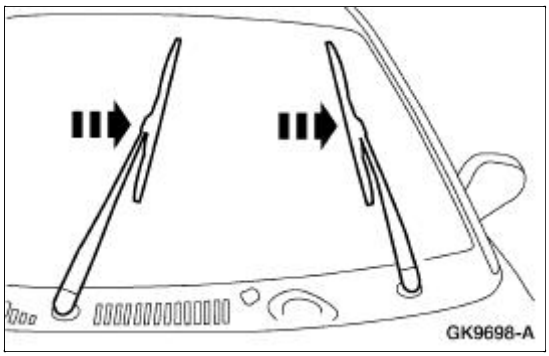
Installation

1. To install, reverse the removal procedure.

Mounting Arm and Pivot Shaft

Removal

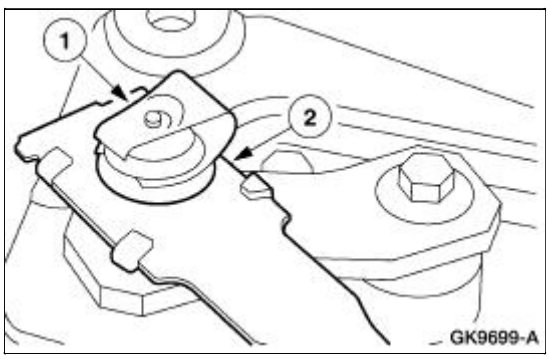
1. Park the windshield wipers in the full upright position. This will allow for easy access to the retaining clip on the wiper motor output shaft.



2. Remove the cowl top vent panels.

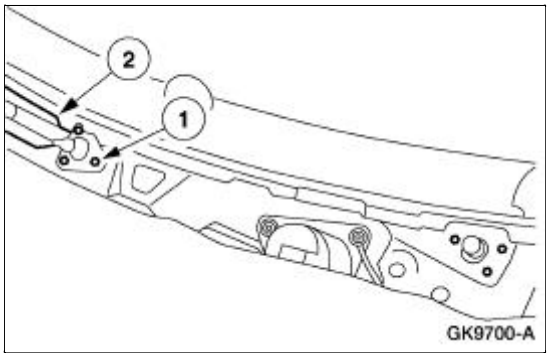
3. Disconnect the battery ground cable.

4. Disconnect the mounting arm and pivot shaft linkage from the wiper motor output shaft.
    1. Remove the clip.
    2. Disconnect the mounting arm and pivot shaft linkage from the wiper motor output shaft.



5. **NOTE:** It is necessary to lower the hood to remove the mounting arm and pivot shaft.

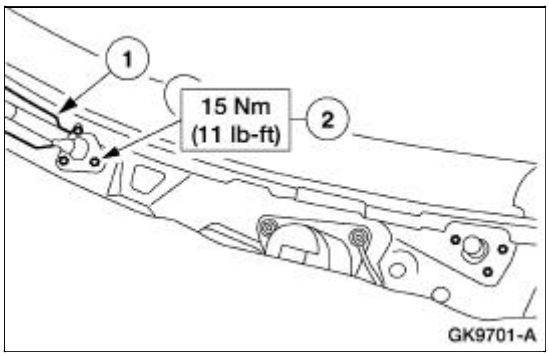
    Remove the mounting arm and pivot shaft.
    1. Remove the bolts.
    2. Remove the mounting arm and pivot shaft through the RH cowl chamber opening.



Installation

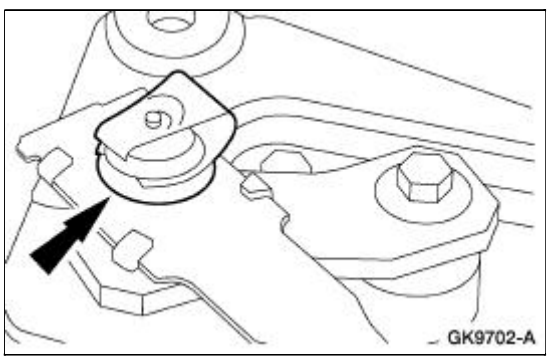
1. **NOTE:** Prior to installing the mounting arm and pivot shaft, install the retaining clip onto the end of the mounting arm and pivot shaft linkage.

   Install the mounting arm and pivot shaft.
   1. Install through the RH cowl chamber opening.
   2. Install the bolts.



2. **NOTE:** It is necessary to lower the hood to install the mounting arm and pivot shaft linkage onto the wiper motor output shaft.

   Install the mounting arm and pivot shaft linkage onto the wiper motor output shaft.
   - Snap the mounting arm and pivot shaft linkage onto the wiper motor output shaft.



3. **NOTE:** When the battery is disconnected and reconnected, some abnormal drive symptoms may occur while the vehicle relearns its adaptive strategy. The vehicle may need to be driven 16 km (10 miles) or more to relearn the strategy.

   Reconnect the negative battery cable.

4. Cycle the wiper motor to the park position.

5. Install the cowl top vent panels.
    - Adjust wiper pivot arms as necessary. Refer to Wiper Blade and Pivot Arm Adjustment .

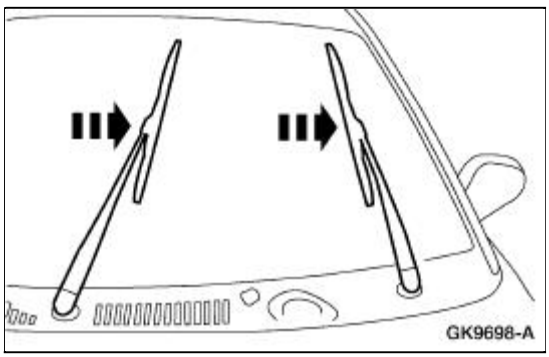
Motor —Windshield Wiper

Removal

CAUTION: The internal permanent magnets used in the windshield wiper motor are made of a glass-like material. To avoid damaging the magnets, do not strike the motor with a hammer or any other object.

NOTE: The windshield wiper motor is not a repairable item. If worn or damaged, install a new wiper motor.

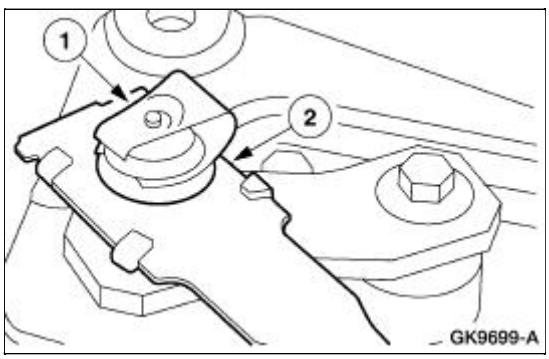
1. Park the windshield wipers in the full upright position. This will allow for easy access to the retaining clip on the wiper motor output shaft.



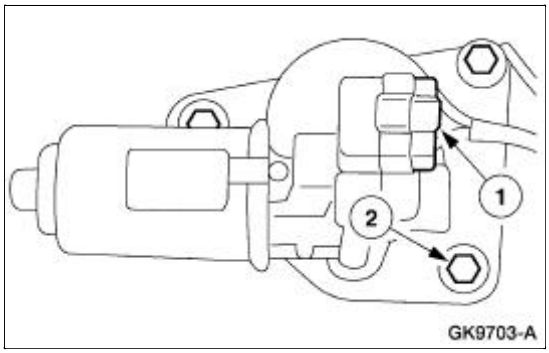
2. Remove the cowl top vent panels.

3. Disconnect the negative battery cable.

4. Disconnect the mounting arm and pivot shaft linkage from the wiper motor output shaft.
    1. Remove the clip.
    2. Disconnect the mounting arm and pivot shaft linkage.



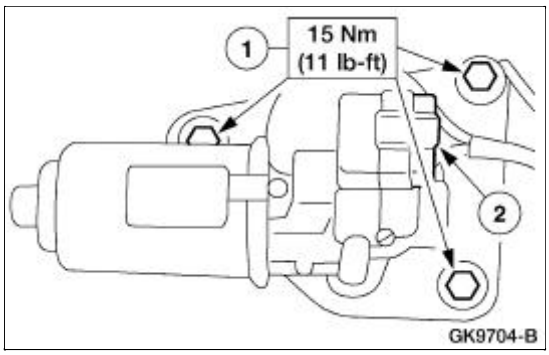
5. Remove the wiper motor.
    1. Disconnect the electrical connector.
    2. Remove the bolts.



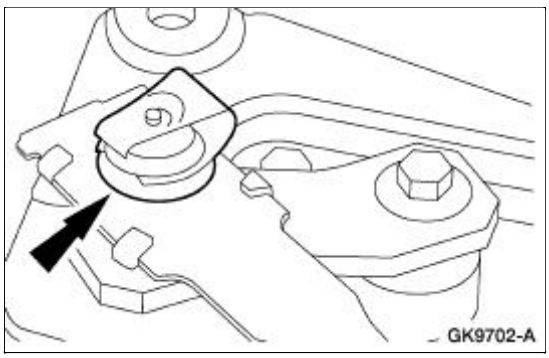
Installation

1. **NOTE:** Install the retaining clip onto the mounting arm and pivot shaft linkage prior to the installation of the wiper motor.

   Install the wiper motor
   1. Install the bolts.
   2. Connect the electrical connector.



2. Snap the mounting arm and pivot shaft linkage onto the wiper motor output shaft.



3. **NOTE:** When the battery is disconnected and reconnected, some abnormal drive symptoms may occur while the vehicle relearns its adaptive strategy. The vehicle may need to be driven 16 km (10 miles) or more to relearn the strategy.

   Reconnect the negative battery cable.

4. Cycle the wiper motor to the park position.

5. Install the cowl top vent panels.
   - Adjust pivot arms as necessary. Refer to Wiper Blade and Pivot Arm Adjustment .

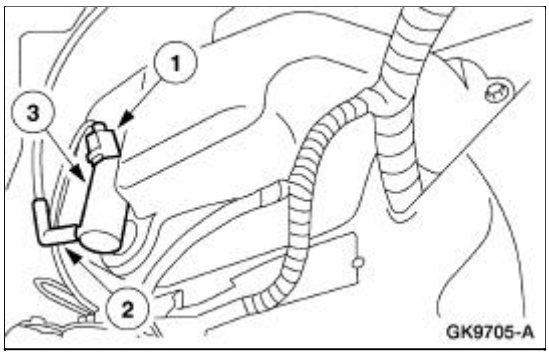
Washer Pump

Removal

1. Remove the LF wheel and tire. Refer to Section 204-04 .
2. Position the front portion of the LF inner splash shield aside.
3. **WARNING: Windshield washer solution contains methanol, which is poisonous. Observe all cautions and warnings indicated on label of washer solution container.**

   NOTE: To prevent spilling windshield washer fluid, drain the windshield washer reservoir before removal.

   Remove the washer pump.
   1. Disconnect the electrical connector.
   2. Disconnect washer hose from the washer pump.
   3. Remove the washer pump.



Installation

1. **WARNING: Windshield washer solution contains methanol, which is poisonous. Observe all cautions and warnings indicated on label of washer solution container.**

   CAUTION: Do not operate the windshield washer pump prior to filling the windshield reservoir.

   To install, reverse the removal procedure.
   - Fill the windshield washer reservoir.

Reservoir

Removal

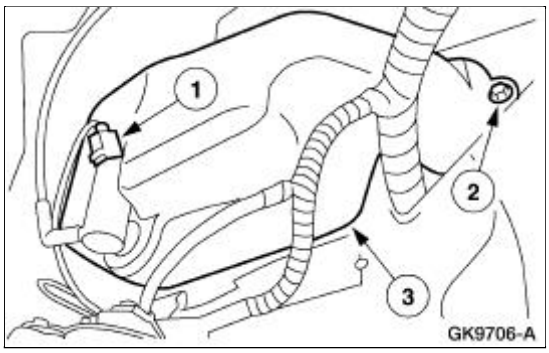
1. Remove the LF wheel and tire. Refer to Section 204-04 .

2. Position the front portion of the LF inner splash shield aside.

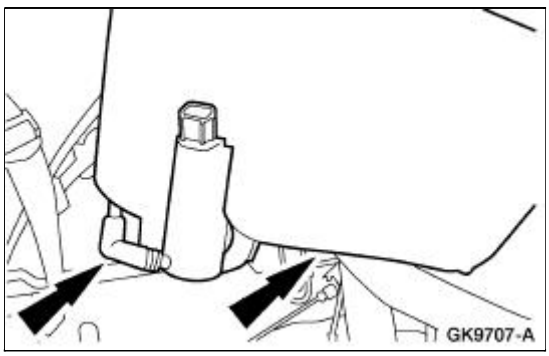
3. **WARNING: Windshield washer solution contains methanol, which is poisonous. Observe all cautions and warnings indicated on label of washer solution container.**

   NOTE: To prevent spilling windshield washer fluid, drain the windshield washer reservoir before removal.

   Position windshield washer reservoir aside.
   1. Disconnect the electrical connector.
   2. Remove the bolt.
   3. Position windshield washer reservoir aside.



4. Remove the washer fluid reservoir.
   - Disconnect the windshield washer pump hose.



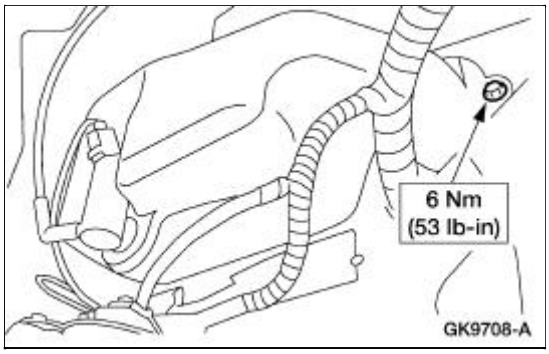
Installation

1. **WARNING: Windshield washer solution contains methanol, which is poisonous. Observe all cautions and warnings indicated on label of washer solution container.**

CAUTION: Do not operate the windshield washer pump prior to filling the windshield reservoir.

To install, reverse the removal procedure.

- Fill the windshield washer reservoir.



Module —Generic Electronic (GEM)

For additional information, refer to Section 419-10 .

Switch —Multi-Function

Removal and Installation

For additional information, refer to Section 211-05 .

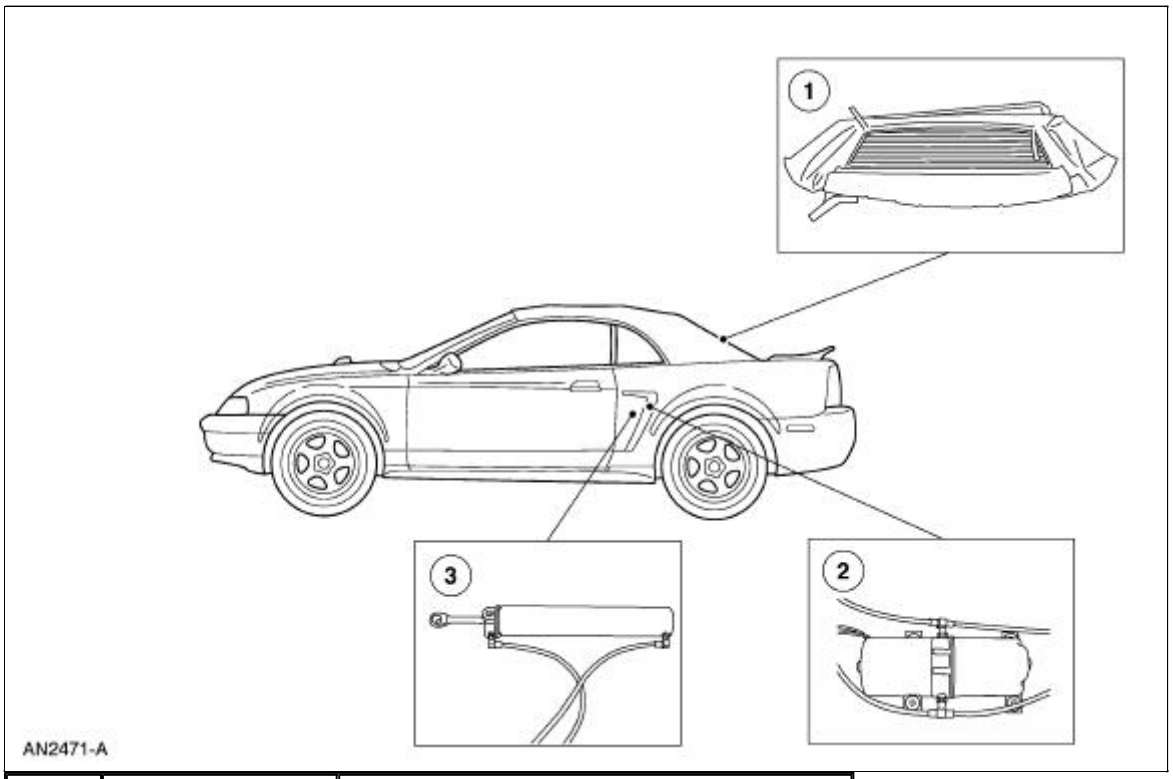
General Specifications

Item	Specification
Mercon® multi-purpose automatic transmission fluid XT-2-QDX	—

Torque Specifications

Description	Nm	lb-ft	lb-in
Cylinder mounting nut	23	17	—
Rail seal screws	3	—	27
Side rail bolts	63	46	—
Cylinder upper mounting bolt	17	13	—
Cylinder retaining bolts	22	16	—
Front safety belt retractor bolts and nut	30	20	—
Front seal screws	5	—	44
Cylinder rod mounting bolts	12	9	—
Side rail to header bolts	23	17	—
Tacking strip nuts	7	—	62
Hydraulic line to lift cylinder nuts	9	—	80
Hydraulic line to motor nuts	12	9	—
B-Hinge lock nut	4	—	35
Balance linkage bolts	22	16	—
Adjusting cam set screw	6	—	53

Convertible Top



Item	Part Number	Description
1	7652500	Rear glass assembly
2	76533A00	Motor assembly
3	011702	Lift cylinder with hydraulic lines

Rear Window Glass Assembly

The convertible top assembly is equipped with a rear window glass assembly. The rear window glass assembly is permanently attached to the folding top rear window curtain and cannot be opened. The rear window glass must be repaired separately.

Stay Pad

The stay pad is attached to the bows and is repaired as a component.

Hydraulic System

The convertible top hydraulic system is comprised of the lift cylinders, the motor, the connecting hydraulic lines and a convertible top switch. The hydraulic system, except for the convertible top switch, is removed as an assembly, but the components may be repaired separately.

Convertible Top

Refer to Wiring Diagrams Cell 103 , for schematic and connector information.

Special Tool(s)

 ST1137-A	73 III Automotive Meter 105-R0057 or equivalent

Principles of Operation

The convertible top will only operate with the parking brake engaged and the ignition switch in the RUN position. When the parking brake is engaged, the raise and lower relay coils are grounded through the parking brake switch. The convertible top switch supplies power to the raise or lower relay coil when raise or lower is selected. This power energizes the coil causing the relay contacts to close which supplies battery power to the convertible top motor/pump assembly. The normal state of the relay is connected to ground. When the raise or lower relay is operating, the other relay remains in its normal state supplying the motor/pump ground.

Convertible Top Adjustments

The convertible top adjustments must be made by a qualified technician.

Inspection and Verification

1. Verify the customer concern by operating the system.
2. Visually inspect for obvious signs of mechanical or electrical damage.

Visual Inspection Chart

Mechanical	Electrical
● Convertible top brackets and frame ● Hydraulic motor and pump ● Hydraulic lift cylinders ● Door and quarter window glass adjustment	● Central junction box (CJB) Fuse 20 (15A) ● Battery junction box (BJB) circuit breaker CONV TOP (30A) ● Wiring harness ● Loose or corroded connections ● Raise or lower relays ● Parking brake switch ● Convertible top switch

3. If an obvious cause for an observed or reported concern is found, correct the cause (if possible) before proceeding to the next step.
4. If the concern is not visually evident, verify the symptom and refer to the Symptom Chart.

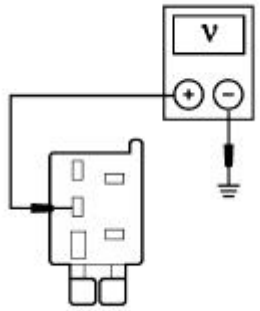
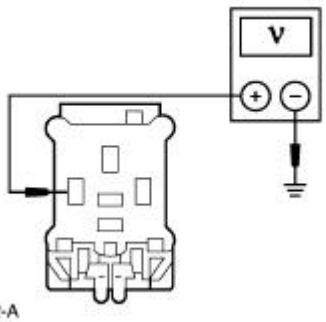
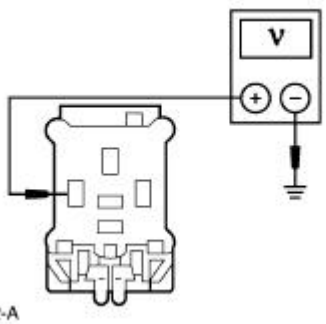
Symptom Chart

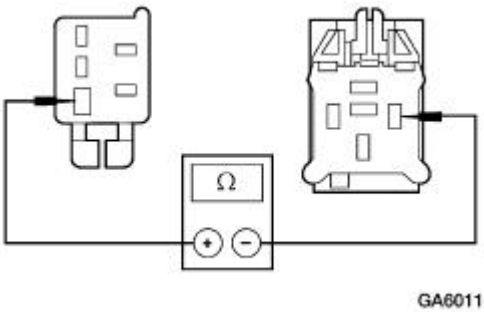
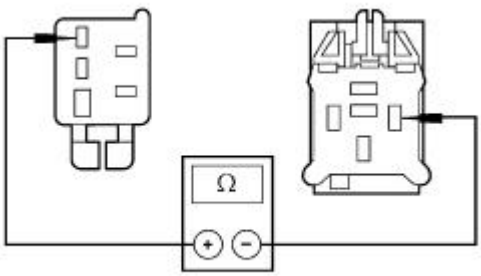
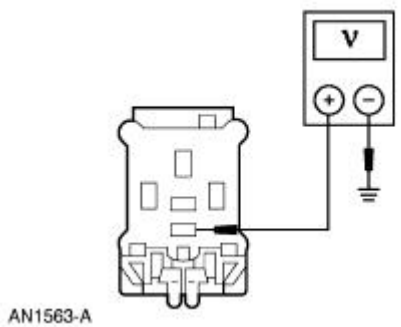
SYMPTOM CHART

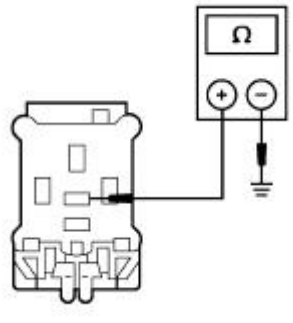
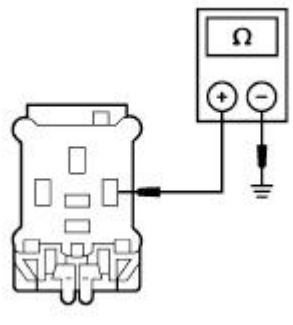
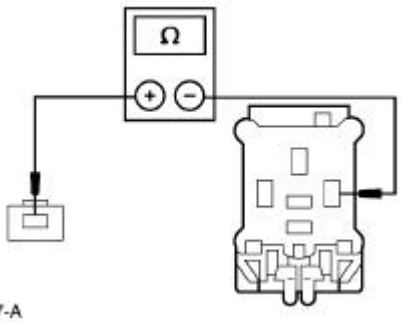
Condition	Possible Sources	Action
• The convertible top does not raise/lower	• Convertible top switch. • Central junction box (CJB) Fuse 20 (15A). • Parking brake switch. • Lower relay. • Raise relay. • Circuitry.	• Go To Pinpoint Test A .
• The convertible top hesitates/comes up uneven	• Convertible top adjustment. • Hydraulic lift cylinders. • Hydraulic system.	• Go To Pinpoint Test B .
• The convertible top does not raise or does not go up all the way	• Convertible top adjustment. • Hydraulic lift cylinders. • Hydraulic system.	• Go To Pinpoint Test C .
• The convertible top hydraulic system	• Convertible top adjustment. • Hydraulic lift cylinders. • Hydraulic motor/pump assembly. • Hydraulic system.	• Go To Pinpoint Test D .

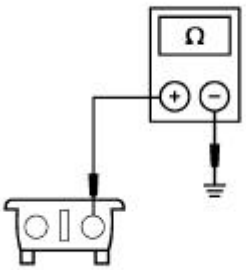
PINPOINT TEST A: THE CONVERTIBLE TOP DOES NOT RAISE/LOWER

Test Step	Result / Action to Take
A1 CHECK THE CONVERTIBLE TOP OPERATION	**Yes** Go To Pinpoint Test C . **No** GO to A2 .
NOTE: The parking brake must be applied for the convertible top system to operate. • Key in ON position. • Depress the convertible top switch in RAISE and LOWER positions while listening for motor operation. • **Does the convertible top motor assembly operate in both directions?**	
A2 CHECK THE POWER SUPPLY TO THE CONVERTIBLE TOP SWITCH	**Yes** GO to A3 . **No** REPAIR circuit 296 (WH/PK). TEST the system for normal operation.
• Key in OFF position. • Disconnect: Convertible Top Switch C3115. • Key in ON position. • Measure the voltage between convertible top switch C3115 pin 4, circuit 296 (WH/PK), harness side and ground.	

 AN1558-A ● **Is the voltage greater than 10 volts?**	
A3 CHECK CIRCUIT 588 (VT) FOR AN OPEN	
● Key in OFF position. ● Connect: Convertible Top Switch C3115. ● Disconnect: Raise Relay C4063. ● Key in ON position. ● Depress and hold the convertible top switch in the RAISE position. ● Measure the voltage between raise relay C4063 pin 85, circuit 588 (VT), harness side and ground.  AN1562-A ● **Is the voltage greater than 10 volts?**	**Yes** GO to A4 . **No** GO to A5 .
A4 CHECK CIRCUIT 688 (GY/LB) FOR VOLTAGE	
● Key in OFF position. ● Disconnect: Lower Relay C4064. ● Key in ON position. ● Depress and hold the convertible top switch in the LOWER position. ● Measure the voltage between lower relay C4064 pin 85, circuit 688 (GY/LB), harness side and ground.  AN1562-A ● **Is the voltage greater than 10 volts?**	**Yes** GO to A9 . **No** GO to A8 .
A5 CHECK CIRCUIT 588 (VT) FOR OPEN	
● Key in OFF position. ● Disconnect: Convertible Top Switch C3115. ● Measure the resistance between convertible top switch C3115 pin 3, circuit 588 (VT), harness side and raise relay C4063 pin 85,	**Yes** INSTALL a new convertible top switch. REFER to Convertible

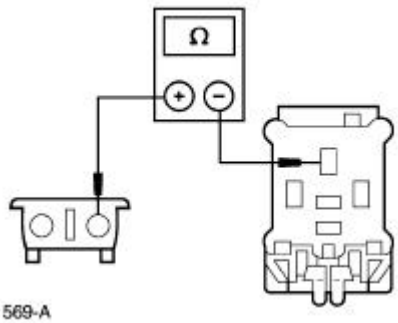
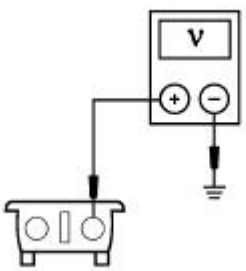
circuit 588 (VT), harness side.  GA6011-A ● **Is the resistance less than 5 ohms?**	Top Switch in this section. TEST the system for normal operation. **No** REPAIR Circuit 588 (VT). TEST the system for normal operation.
A6 CHECK CIRCUIT 688 (GY/LB) FOR OPEN	
● Key in OFF position. ● Disconnect: Convertible Top Switch C3115. ● Measure the resistance between convertible top switch C3115 pin 5, circuit 688 (GY/LB), harness side and lower relay C4064 pin 85, circuit 688 (GY/LB), harness side.  GA6012-A ● **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new convertible top switch. REFER to Convertible Top Switch in this section. TEST the system for normal operation. **No** REPAIR circuit 688 (GY/LB). TEST the system for normal operation.
A7 CHECK THE BATTERY SUPPLY TO THE RELAYS	
● Measure the voltage between raise relay C4063 pin 87, circuit 170 (RD/LB), harness side and ground; and between lower relay C4064 pin 87, circuit 170 (RD/LB), harness side and ground.  AN1563-A ● **Are the voltages greater than 10 volts?**	**Yes** GO to A8. **No** REPAIR circuit 170 (RD/LB). TEST the system for normal operation.
A8 CHECK CIRCUIT 1205 (BK) FOR AN OPEN	
● Key in OFF position. ● Measure the resistance between raise relay C4063 pin 87A, circuit 1205 (BK), harness side and ground; and between lower relay C4064 pin 87A, circuit 1205 (BK), harness side and ground.	**Yes** GO to A9. **No** REPAIR the circuit. TEST the system for normal operation.

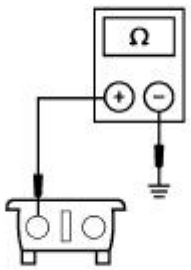
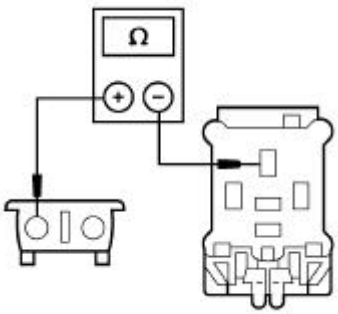
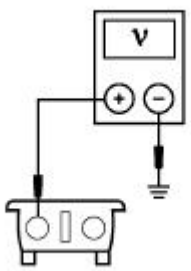
 AN1565-A ● **Are the resistances greater than 10,000 ohms?**	
A9 CHECK FOR PARKING BRAKE GROUND ● Measure the resistance between raise relay C4063 pin 86, circuit 977 (VT/WH), harness side and ground; and between lower relay C4064 pin 86, circuit 977 (VT/WH), harness side and ground.  AN1566-A ● **Are the resistances less than 5 ohms?**	**Yes** GO to A11 . **Yes** GO to A10 .
A10 CHECK THE PARKING BRAKE SWITCH ● Disconnect: Parking Brake Switch C306. ● Measure the resistance between raise relay C4063 pin 86, circuit 977 (VT/WH), harness side and parking brake switch C306, circuit 22 (LB/BK), harness side; and between lower relay C4064 pin 86, circuit 977 (VT/WH), harness side and parking brake switch C306, circuit 22 (LB/BK), harness side.  AN1567-A ● **Are the resistances less than 5 ohms?**	**Yes** INSTALL a new parking brake switch. REFER to Section 206-05 . TEST the system for normal operation. **No** REPAIR the circuit in question. TEST the system for normal operation.
A11 CHECK THE CONVERTIBLE TOP MOTOR LOWER CIRCUIT ● Connect: Raise Relay C4063. ● Connect: Lower Relay C4064. ● Disconnect: Convertible Top Motor C4062. ● Measure the resistance between convertible top motor C4062, circuit 902 (YE), harness side and ground.	**Yes** GO to A13 . **No** GO to A12 .



AN1568-A

- **Is the resistance less than 5 ohms?**

A12 CHECK CIRCUIT 902 (YE) FOR AN OPEN	
• Disconnect: Lower Relay C4064. • Measure the resistance between lower relay C4064 pin 30, circuit 902 (YE), harness side and convertible top motor C4062, circuit 902 (YE), harness side.  AN1569-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new lower relay. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
A13 CHECK THE LOWER INPUT TO THE MOTOR	
• Key in ON position. • Measure the voltage between convertible top motor C4062, circuit 902 (YE), harness side and ground.  AN1570-A • Depress and hold the convertible top switch in the LOWER position. • **Is the voltage greater than 10 volts?**	**Yes** GO to A14 . **No** INSTALL a new lower relay. TEST the system for normal operation.
A14 CHECK THE CONVERTIBLE TOP MOTOR RAISE CIRCUIT	
• Key in OFF position. • Measure the resistance between convertible top motor C4062, circuit 903 (RD), harness side and ground.	**Yes** GO to A16 . **No** GO to A15 .

 AN1571-A ● **Is the resistance less than 5 ohms?**	
A15 CHECK CIRCUIT 903 (RD) FOR AN OPEN	**Yes** INSTALL a new raise relay. TEST the system for normal operation. **No** REPAIR the circuit. TEST the system for normal operation.
● Disconnect: Raise Relay C4063. ● Measure the resistance between raise relay C4063 pin 30, circuit 903 (RD), harness side and convertible top motor C4062, circuit 903 (RD), harness side.  AN1572-A ● **Is the resistance less than 5 ohms?**	
A16 CHECK THE RAISE INPUT TO THE MOTOR	**Yes** INSTALL a new convertible top motor; REFER to Hydraulic System, Lift Cylinder and Motor in this section. TEST the system for normal operation. **No** INSTALL a new raise relay. TEST the system for normal operation.
● Key in ON position. ● Depress and hold the convertible top switch in the RAISE position. ● Measure the voltage between convertible top motor C4062, circuit 903 (RD), harness side and ground.  AN1573-A ● **Is the voltage greater than 10 volts?**	

PINPOINT TEST B: THE CONVERTIBLE TOP HESITATES/COMES UP UNEVEN

Test Step	Result / Action to Take
B1 CHECK THE CONVERTIBLE TOP UP/DOWN OPERATION	
NOTE: The parking brake must be applied for the	**Yes**

convertible top system to operate. ● Key in ON position. ● Actuate the convertible top switch to the LOWER and RAISE positions. ● **Did the convertible top operate to the full down and full up position without hesitating?**	ADJUST the convertible top linkage. TEST the system for normal operation. **No** GO to B2 .
B2 CHECK THE MOTOR OPERATION	
● Gain access to the convertible top motor/pump assembly. ● Operate the convertible top to the LOWER and RAISE positions while listening to the motor. ● **Did the motor stop and then continue at any time?**	**Yes** Go To Pinpoint Test A . **No** GO to B3 .
B3 CHECK THE CONVERTIBLE TOP LINKAGE	
● Operate the convertible top to the LOWER and RAISE positions while observing the convertible top linkage. ● **Did the linkage operate smoothly without binding?**	**Yes** Go To Pinpoint Test D . **No** ADJUST the convertible top linkage. TEST the system for normal operation.

PINPOINT TEST C: THE CONVERTIBLE TOP DOES NOT RAISE OR DOES NOT GO UP ALL THE WAY

Test Step	Result / Action to Take
C1 CHECK THE CONVERTIBLE TOP OPERATION	
NOTE: The parking brake must be applied for the convertible top system to operate. ● Key in ON position. ● Actuate the convertible top switch to the RAISE position. ● **Did the motor operate?**	**Yes** GO to C2 . **No** Go To Pinpoint Test A .
C2 CHECK THE CONVERTIBLE TOP LINKAGE	
● Operate the convertible top to the LOWER and RAISE positions while observing the convertible top linkage. ● **Did the linkage bind and prevent the convertible top from raising?**	**Yes** ADJUST the convertible top linkage. TEST the system for normal operation. **No** Go To Pinpoint Test D .

PINPOINT TEST D: THE CONVERTIBLE TOP HYDRAULIC SYSTEM

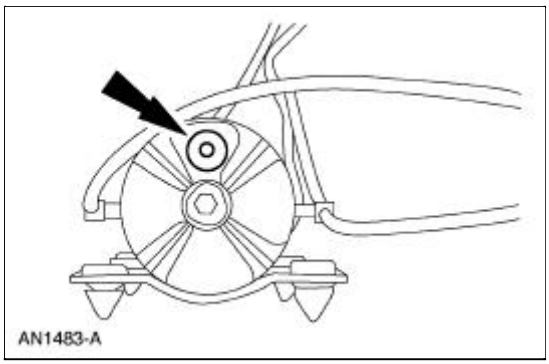
Test Step	Result / Action to Take
D1 CHECK THE FLUID LEVEL	
NOTE: The fluid level should be even with the bottom of the filler plug hole. **NOTE:** Place an absorbent cloth below the filler plug when checking the fluid level. ● Remove the filler plug and check the	**Yes** GO to D3 . **No** GO to D2 .

fluid level. • **Is the fluid level OK?**	
D2 CHECK THE HYDRAULIC SYSTEM FOR LEAKS	
• Inspect all fittings and hoses for leaks. • **Are any leaks noticed?**	**Yes** REPAIR the leaking fittings or INSTALL new hoses as necessary. TEST the system for normal operation. **No** GO to D3 .
D3 BLEED THE HYDRAULIC SYSTEM	
• Bleed the hydraulic system. Refer to System Bleeding in this section. • **Does the system operate correctly after bleeding?**	**Yes** OPERATE the convertible top up and down three times. INSPECT the hydraulic system for leaks or loss of fluid. REPAIR as necessary if loss of fluid is detected. **No** GO to D4 .
D4 CHECK THE CONVERTIBLE TOP	
• Remove the hydraulic system from the vehicle. Refer to Hydraulic System, Lift Cylinder and Motor in this section. • Operate the convertible top assembly up and down manually. • **Does the convertible top bind?**	**Yes** ADJUST the convertible top. INSTALL the hydraulic system; REFER to Hydraulic System, Lift Cylinder and Motor in this section. TEST the system for normal operation. **No** GO to D5 .
D5 CHECK THE HYDRAULIC SYSTEM OUT OF THE VEHICLE	
• Bleed the hydraulic system. Refer to System Bleeding in this section. • **Does the system operate correctly after bleeding?**	**Yes** CHECK all fittings and hoses for leaks. REPAIR as necessary if loss of fluid is detected. INSTALL the hydraulic system; REFER to Hydraulic System, Lift Cylinder and Motor in this section. TEST the system for normal operation. **No** GO to D6 .
D6 CHECK THE LIFT CYLINDERS	
• Operate the hydraulic system using a 12 volt power source. • **Did the lift cylinders extend and retract?**	**Yes** INSTALL a new motor/pump assembly. REFER to Hydraulic System, Lift Cylinder and Motor in this section. TEST the system for normal operation. **No** INSTALL a new lift cylinder. REFER to Hydraulic System, Lift Cylinder and Motor in this section. TEST the system for normal operation.

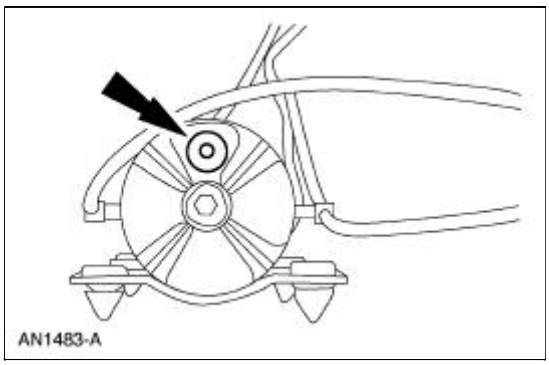
System Bleeding

1. If required, remove the hydraulic system from the vehicle. Refer to Hydraulic System, Lift Cylinder and Motor in this section.

2. Remove the fill plug at the end of the hydraulic pump.



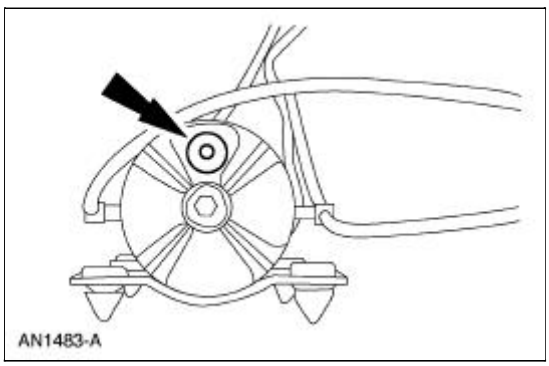
3. Fill the pump with Mercon® Multi-Purpose Automatic Transmission Fluid XT-2-QDX or equivalent to the bottom of the fill hole and install the fill plug.



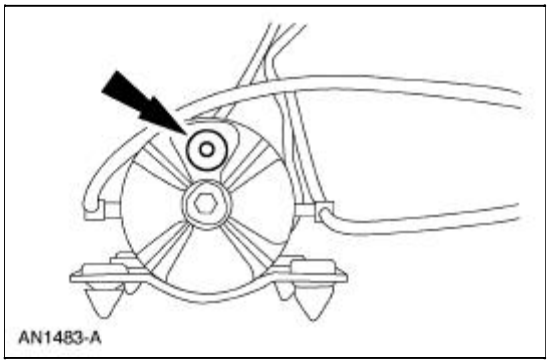
4. **NOTE:** Some noise squeal may be noticed due to the air in the system.

   Connect a 12-volt power source to the motor connector and operate the motor until the cylinders are fully extended. Reverse the 12-volt connection to fully retract the cylinders. Repeat this procedure three times.

5. Remove the fill plug and check the fluid level. Fill the pump with MERCON® Multi-Purpose Automatic Transmission Fluid XT-2-QDX or equivalent to the bottom of the fill hole.



6. Install a fill plug.



7. Install the hydraulic system in the vehicle. Refer to Hydraulic System, Lift Cylinder and Motor in this section.

Linkage Adjustment

Material

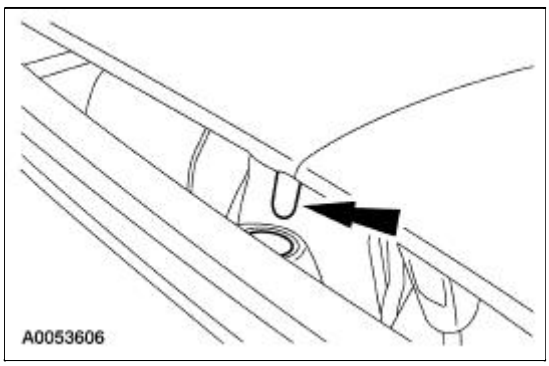
Item	Specification
Threadlock and Sealer E0AZ-19554-AA	WSK-M2G351-A5 (type II)
Shoulder Bolt Kit F5ZZ-76539A04-A	—

NOTE: Before starting the adjustment process, inspect the top for damage, make sure that the door window glass and rear quarter glass are correctly adjusted then completely lower all window glass.

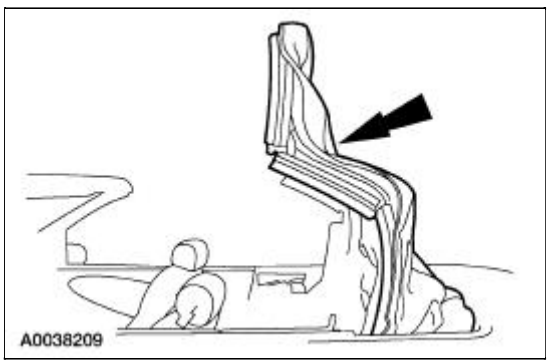
NOTE: After each adjustment make sure the convertible top operates correctly.

The Convertible Top Dowel Pins Fall Forward (Overshoot) or Rearward (Undershoot). The Receiver Cups — Cam Bolt Adjustment.

1. Remove the quarter trim panel. For additional information, refer to Section 501-05 .
2. Close the convertible top and examine the position of the dowel pins relative to the receiver cups.



3. Move the convertible top to the half-open position to access the cam bolt.

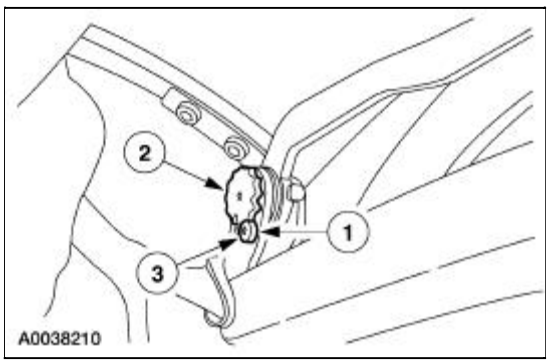


4. **NOTE:** Rotating the top of the cam bolt toward the front of the vehicle will lengthen the top, increase the tension on the top and increase pull-down effort. Rotating the cam bolt in the

opposite direction will have the opposite effect.

NOTE: Turn the adjusting cam one notch at a time.

Adjust the adjusting cam as needed.
1. Remove the cam stop set screw.
2. Rotate the adjusting cam.
3. Install the cam stop set screw.

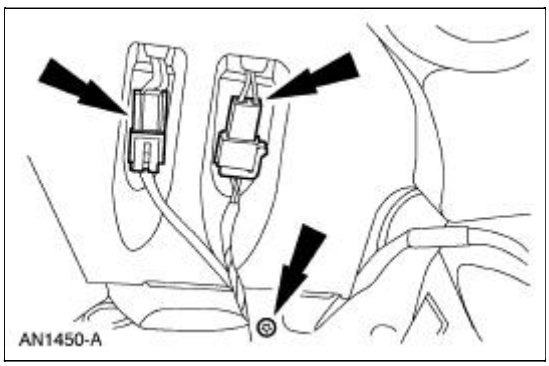


5. Make sure the convertible top operate correctly.
6. Install the quarter trim panel. For additional information, refer to Section 501-05 .
7. Close the convertible top.

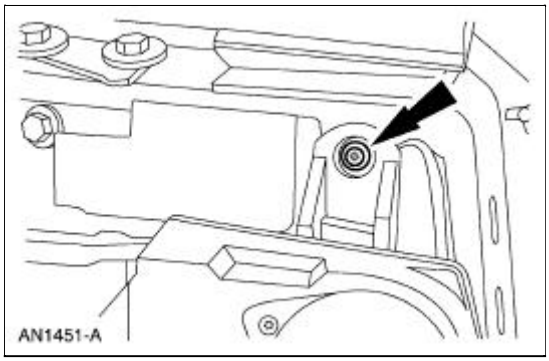
Convertible Top Lifts Up Unevenly — Lift Cylinder and C-pivot Inspection

8. Remove the quarter trim panel. For additional information, refer to Section 501-05 .
9. **NOTE:** This step applies to vehicles equipped with the Mach sound system.

   Remove the screws and disconnect the electrical connectors.

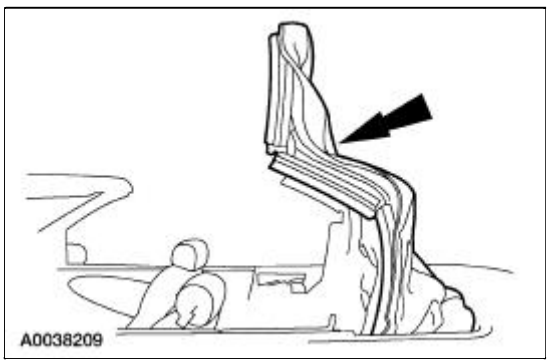


10. Remove the screws.

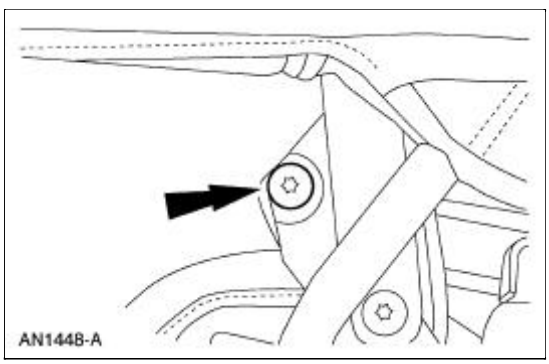


11. Remove the speakers. For additional information, refer to Section 415-03 .

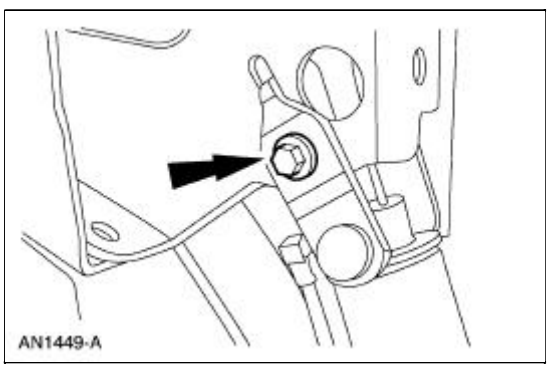
12. Move the convertible top to the half-open position and support the convertible top in that position.



13. Remove the lift cylinder rod mounting bolts.



14. Remove the nuts and support the lift cylinders.



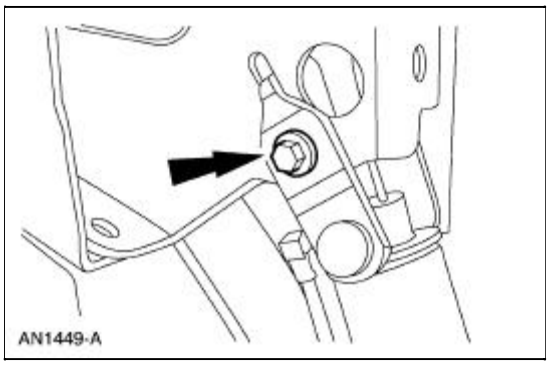
15. Using the convertible top switch, retract the lift cylinder rods and check for bent or binding rods.

If one rod bottoms out 25mm (1 inch) or more before the other, the lagging lift cylinder may be bent and will need to be replaced.

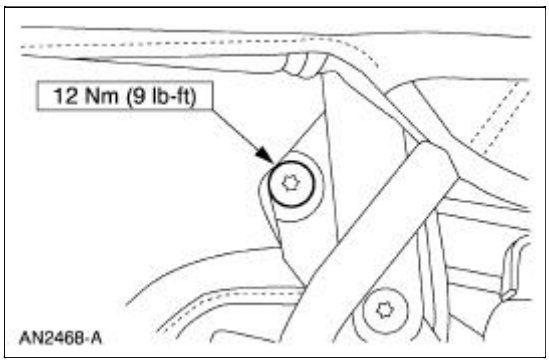
16. With the lift cylinder rods retracted, manually lower the convertible top.

17. Manually lift each side rail 7.5-10 cm (3-4 inches) to check for obvious binding. Side arms should have equal resistance, side-to-side. If the resistance is noted, loosen the clamp load of the c-pivot rivet with using a center pinch. If a dramatic resistance is still noted replace the c-pivot rivet with shoulder bolt kit (F5ZZ-76539A04-A).

18. Position the lift cylinders and install the nuts.

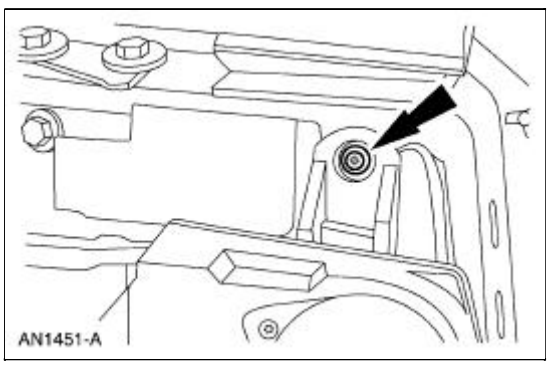


19. Install the two cylinder rod mounting bolts.



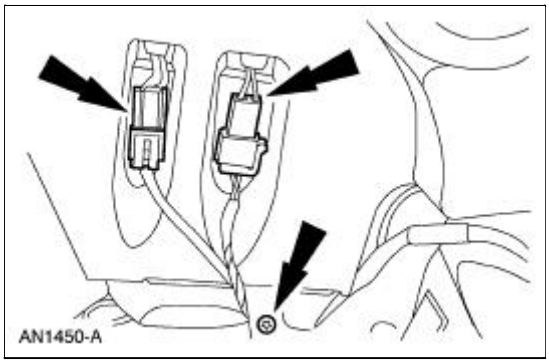
20. Install the speakers. For additional information, refer to Section 415-03 .

21. Install the screws.



NOTE: This step applies to vehicles equipped with the Mach sound system.

22. Install the screws and connect the electrical connectors.



23. Install the quarter trim panel. For additional information, refer to Section 501-05 .

24. Make sure the convertible top operate correctly.

25. Close the convertible top.

Convertible Top No. 1 Bow is Not Flush to the Header — Balance Link Adjustment.

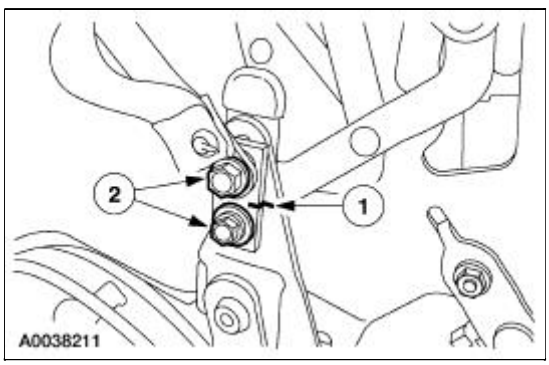
CAUTION: Over adjustment of the balance link can cause the convertible top to bind up in the convertible top well.

CAUTION: If the balance link is raised the B-hinge must be adjusted to keep the door window glass from striking the convertible top, preventing the door from closing.

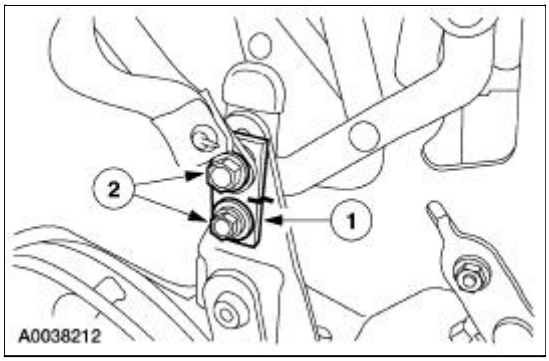
26. Remove the quarter trim panel. For additional information, refer to Section 501-05 .

NOTE: Lowering the balance link will raise the No. 1 bow position to the vehicle header and increase the pull down effort. Raising the balance link will lower the No. 1 bow to the header of the vehicle and decrease the pull-down effort.

27. Adjust the balance link assembly.
    1. Scribe a mark on the balance link.
    2. Loosen the bolts.



28. Tighten the balance link assembly.
    1. Move the balance link assembly.
    2. Tighten the bolts.



29. Make sure the convertible top operates correctly.

30. Install the quarter trim panel. For additional information, refer to Section 501-05 .

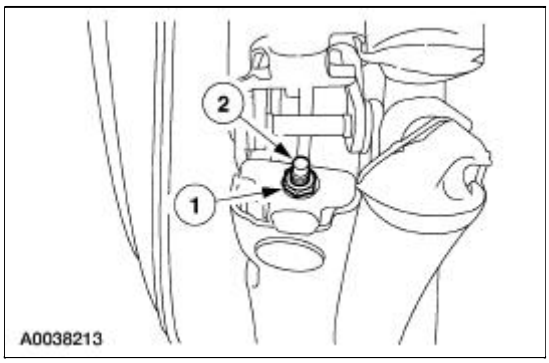
31. Close the convertible top.

Convertible Top Appears Low at the Center of the Door Window Glass — B-hinge Adjustment

32. Remove the quarter trim panel. For additional information, refer to Section 501-05 .

NOTE: If the B-hinge set screw is adjusted to raise or lower the B-hinge, inspect the header height, top pull down and dowl and receiver clearance. Adjust the cam bolt and balance link as necessary.

33. Tighten the lock nut.
    - Use Threadlock and sealer on the lock nut.



34. Tighten the lock nut.
    - Threadlock and sealer on the lock nut.

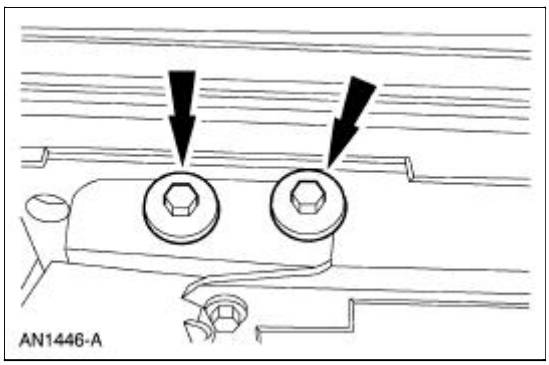
35. Make sure the convertible top operate correctly.

36. Install the quarter trim panel. For additional information, refer to Section 501-05 .

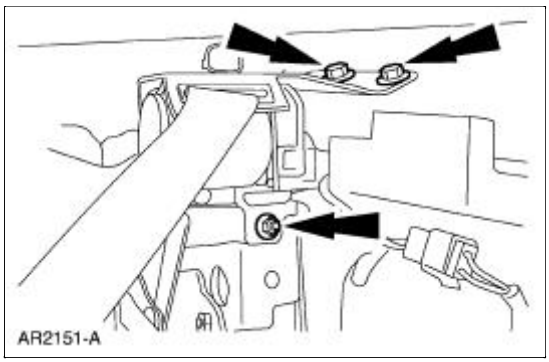
37. Close the convertible top.

Convertible Top Assembly —Side Rail, Folding Top

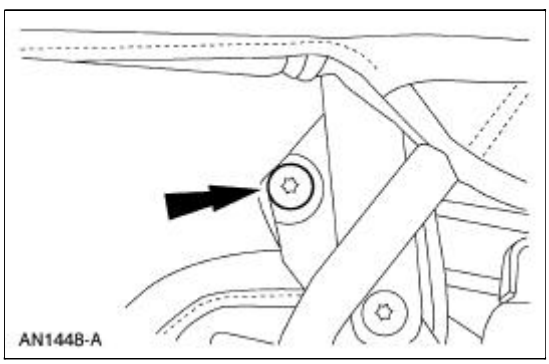
1. Remove the side quarter trim panel. For additional information, refer to Section 501-05 .
2. If necessary, remove the bolts.



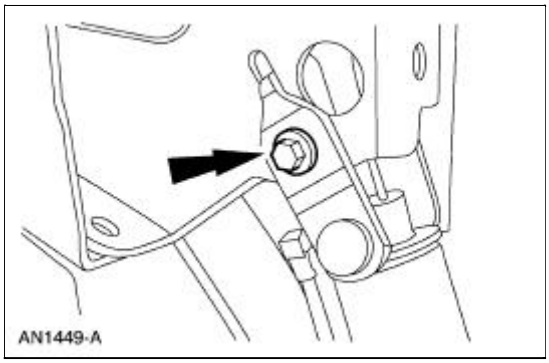
3. Remove the nut and bolts and position the front safety belt retractor aside.



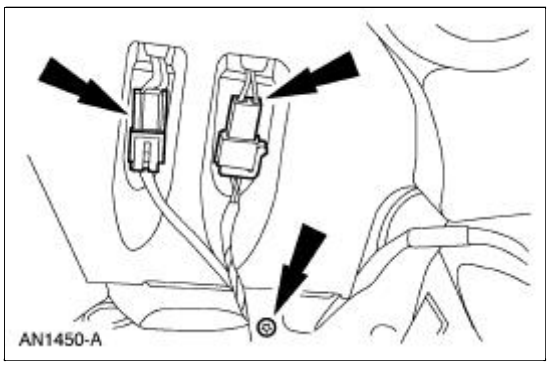
4. Remove the two cylinder rod mounting bolts.



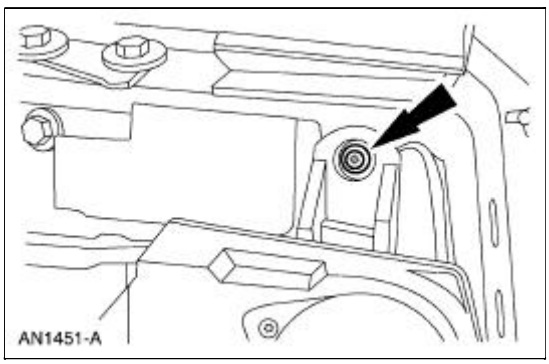
5. Remove the cylinder rod mounting nut.



6. Remove the screw and disconnect the two electrical connectors.

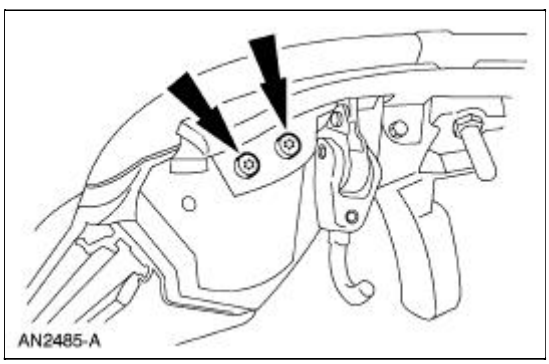


7. Remove the screw.

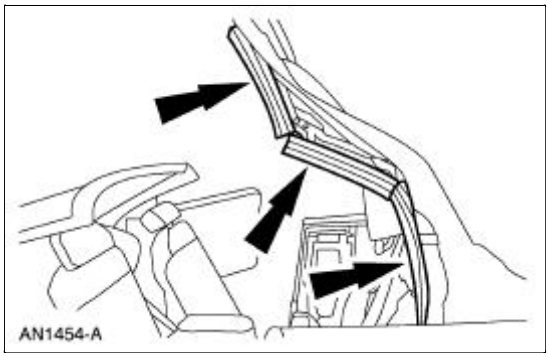


8. Remove the speaker.

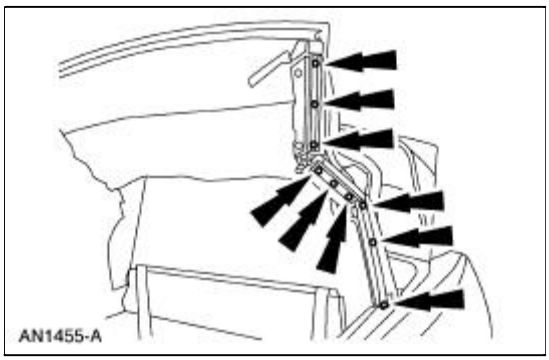
9. Remove the screws and the front seal.



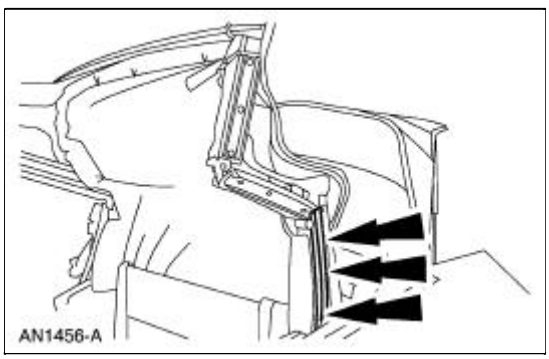
10. Remove the rail seals.



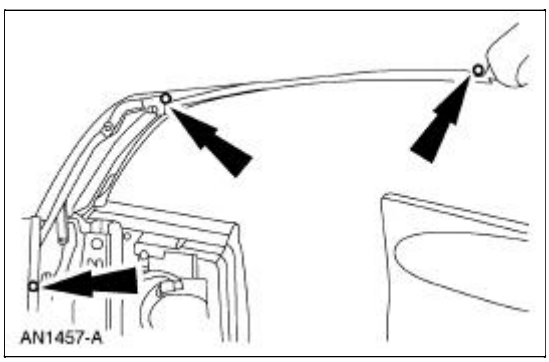
11. Remove the rail seal retainers.



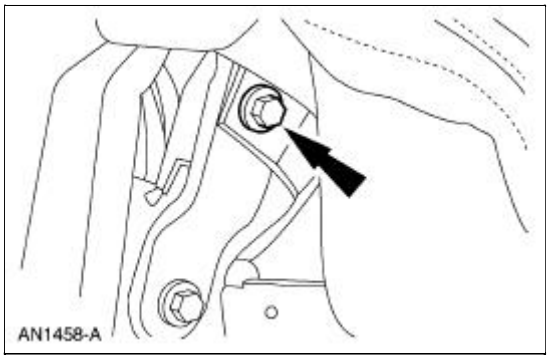
12. Remove the headliner pin-type retainers.



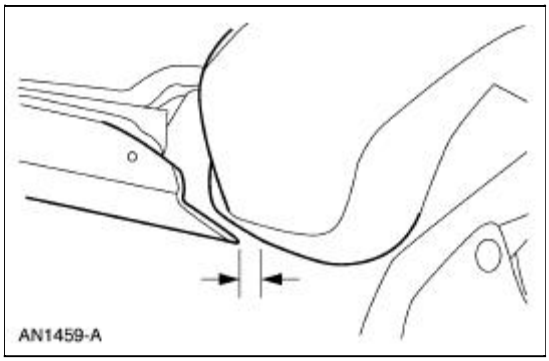
13. Remove the headliner screws.



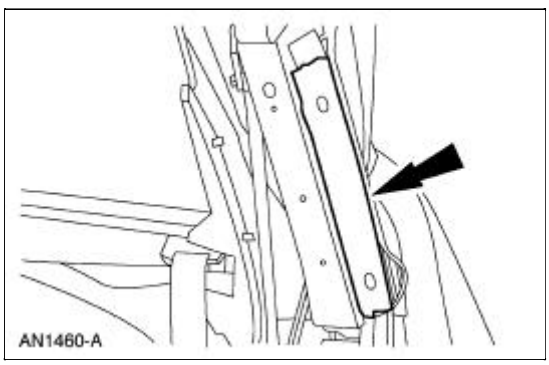
14. Remove the speed nut.



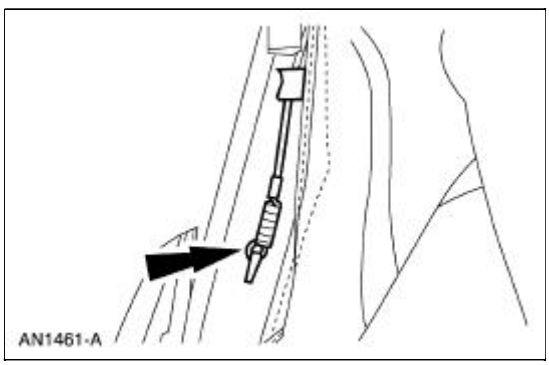
15. Measure the gap between the front of the side rail and the header. Record the figure and the position of the folding top.



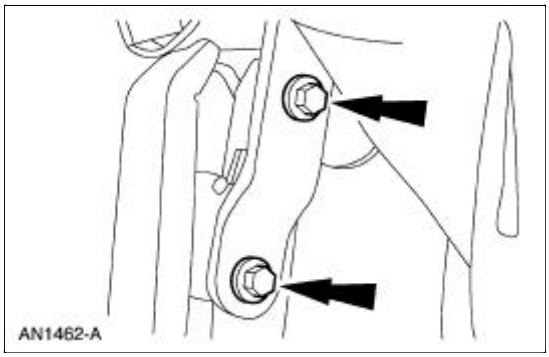
16. Separate the vinyl top cover flap from the rear rail.



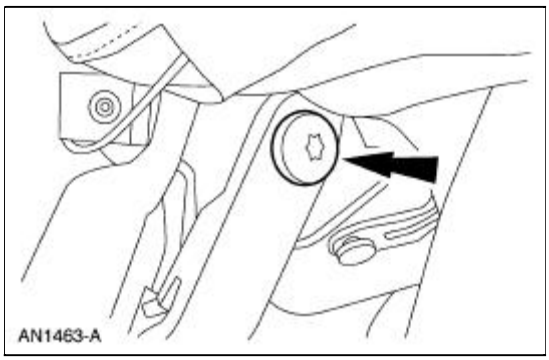
17. Disconnect the side tension cable from the rear rail.



18. Remove the two bolts.



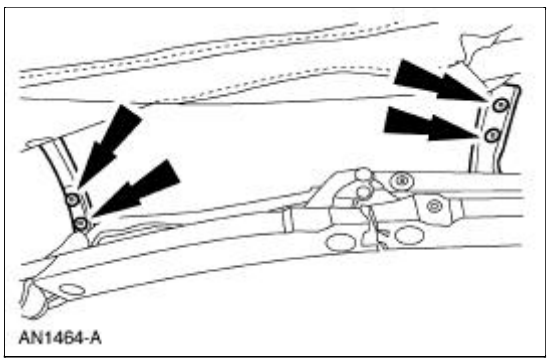
19. Loosen the bolt, but do not remove it.



20. **NOTE:** Do not latch the folding top after re-positioning.

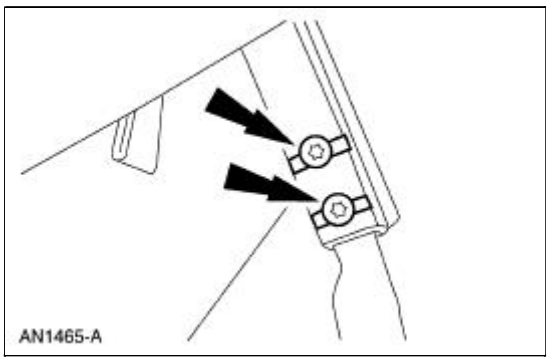
    Position the folding top in the full up position.

21. Disconnect the number two and number three bows from the side rail assembly.

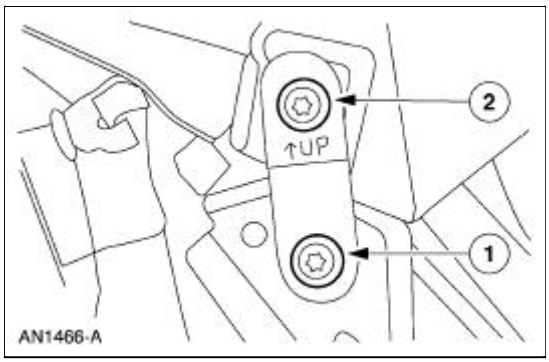


22. **NOTE:** Mark the centerline locations for the number four bow screws.

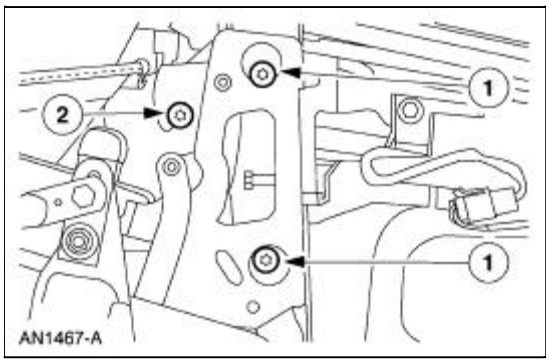
    Remove the screws.



23. Disconnect the mounting bracket.
    1. Loosen the bottom bolt.
    2. Remove the upper bolt.

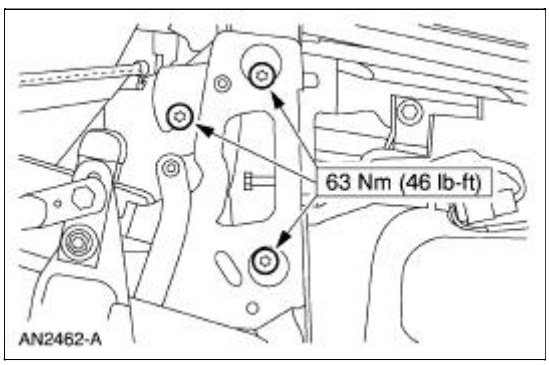


24. Remove the side rail.
    1. Remove the two bolts.
    2. Loosen the bolt.



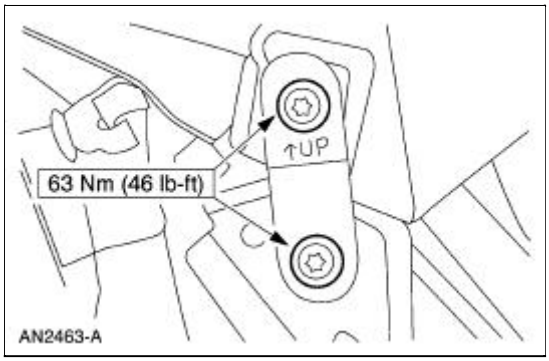
Installation

1. Position the side rail and install the bolts.



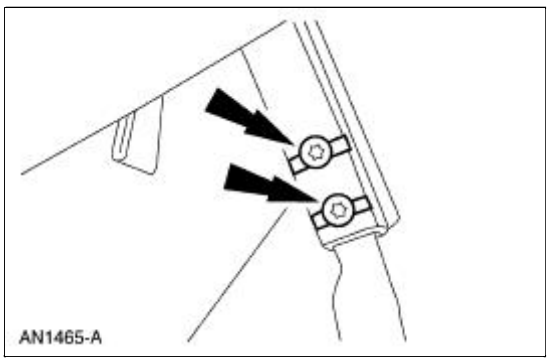
2. **NOTE:** Tighten the bottom bolt first.

   Connect the mounting bracket and install the bolts.

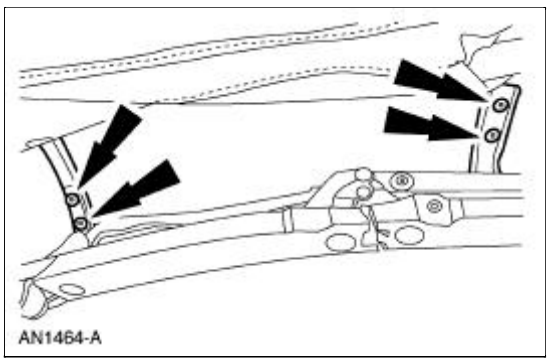


3. **NOTE:** Line up the marks in the number four bow.

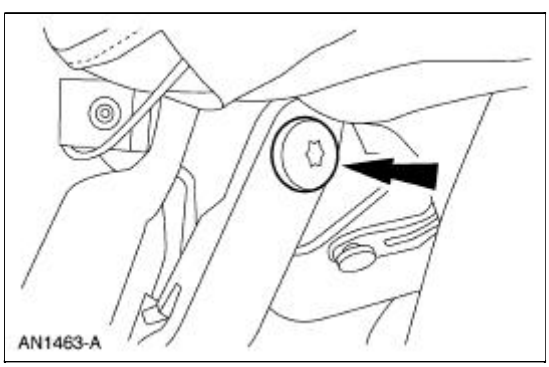
   Tighten the bolt.



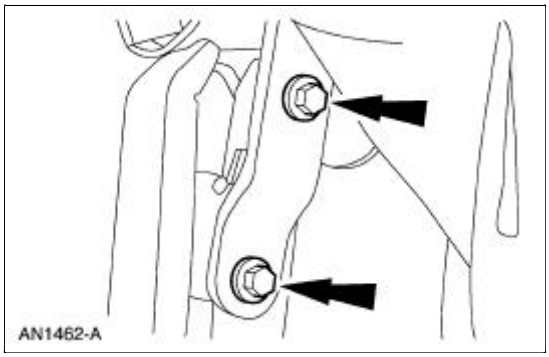
4. Connect the number two and number three bows to the side rail assembly.



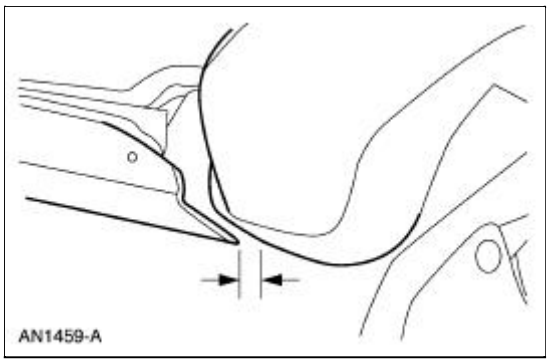
5. Tighten the bolt.



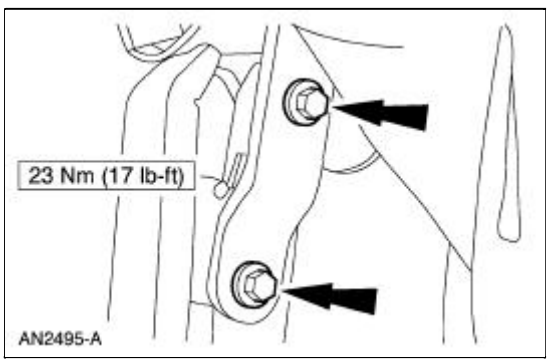
6. Hand-tighten the two bolts.



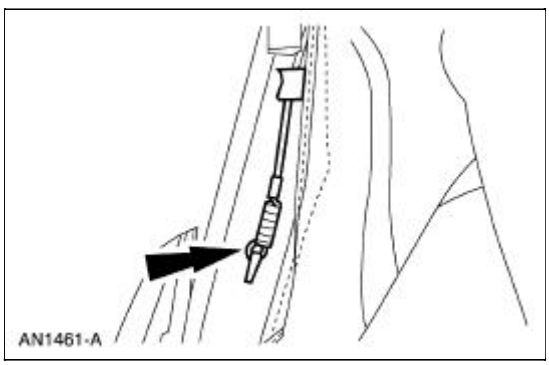
7. Adjust the gap between the front of the side rail and the header to the previously recorded dimensions.



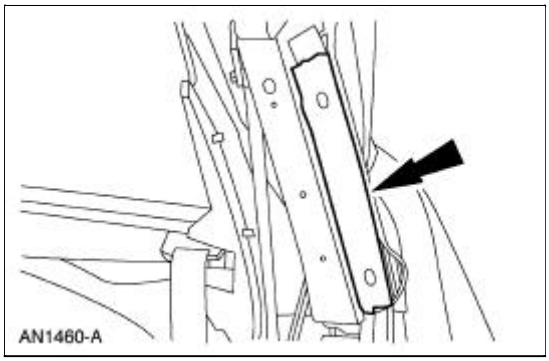
8. Tighten the bolts.



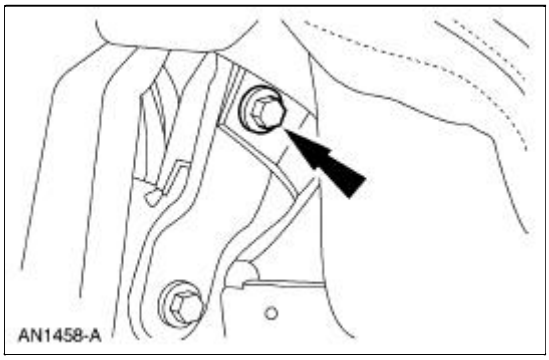
9. Connect the cable to the rear rail.



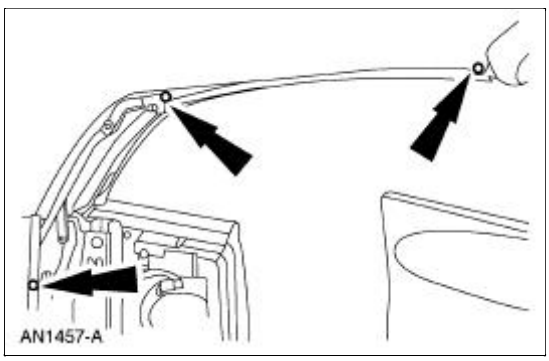
10. Attach the vinyl top cover flap to the rear rail.



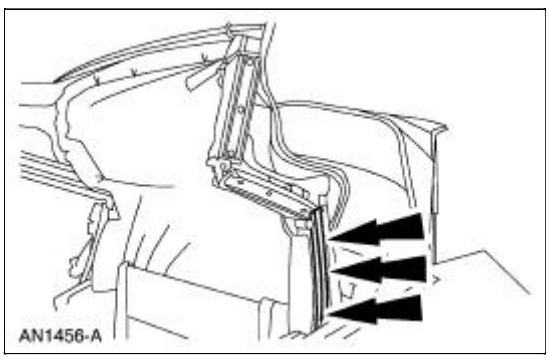
11. Install the speed nut.



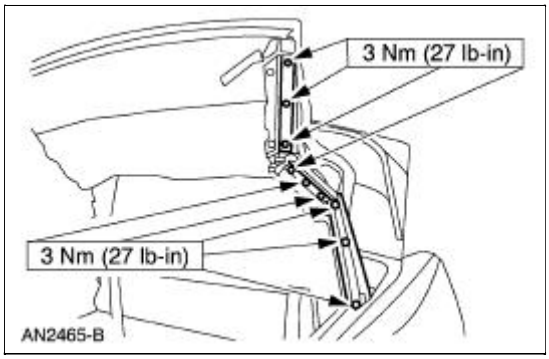
12. Install the headliner screws.



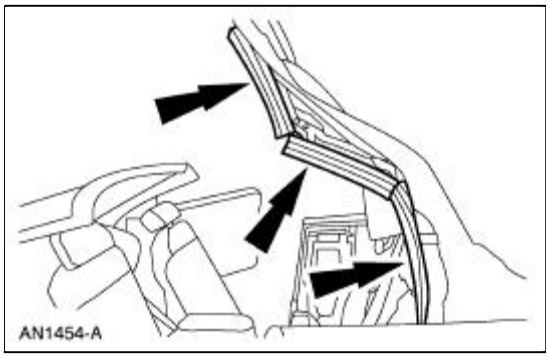
13. Attach the headliner pin-type retainers.



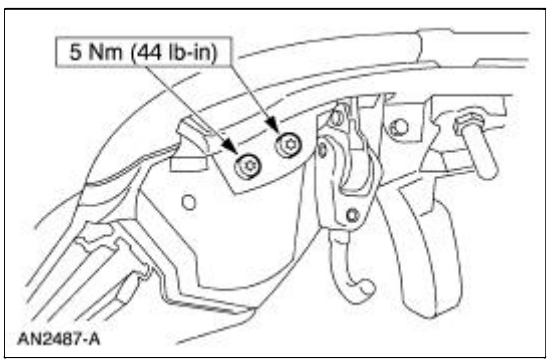
14. Install the rail seal screws.



15. Install the rail seals.

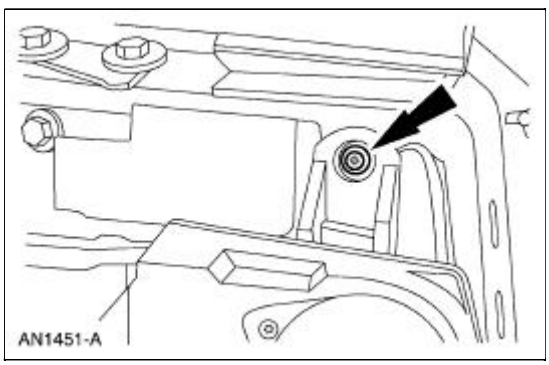


16. Install the screws and the front seal.

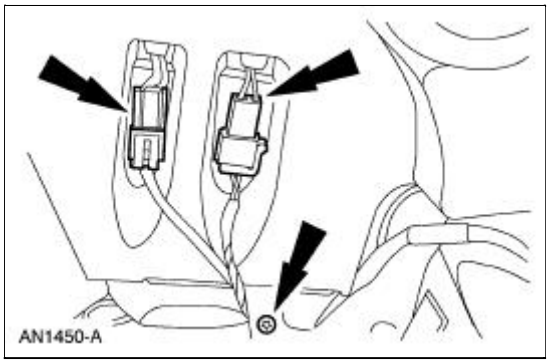


17. Install the speaker.

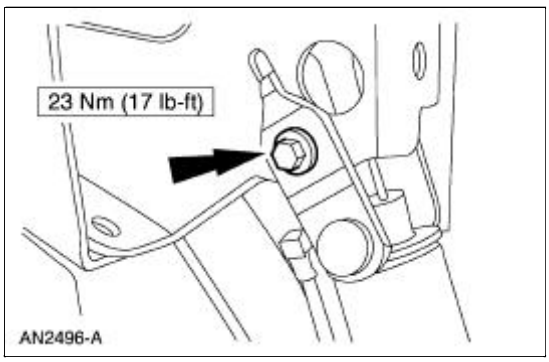
18. Install the screw.



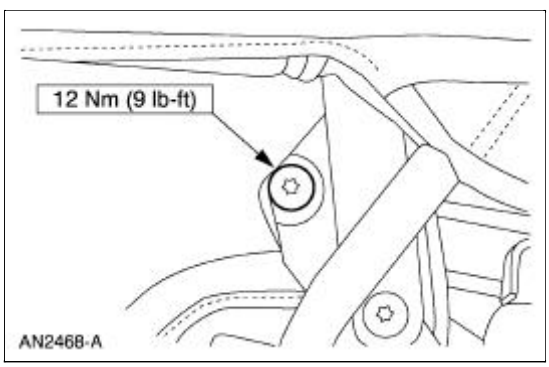
19. Install the screw and connect the electrical connectors.



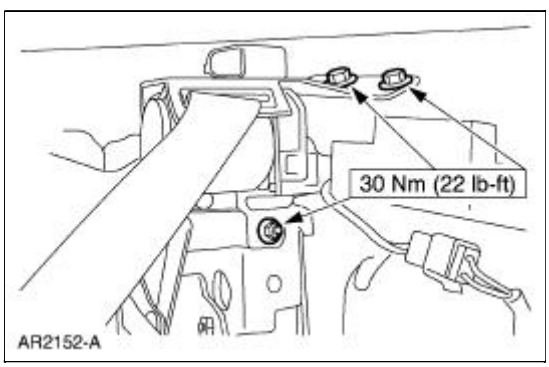
20. Position the cylinders and install the nuts.



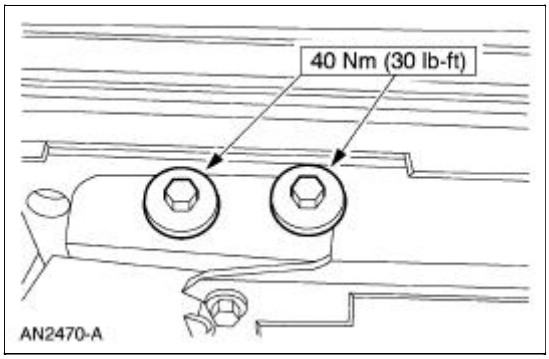
21. Install the two cylinder rod mounting bolts.



22. Install the front safety belt retractor.



23. Install the bolts.

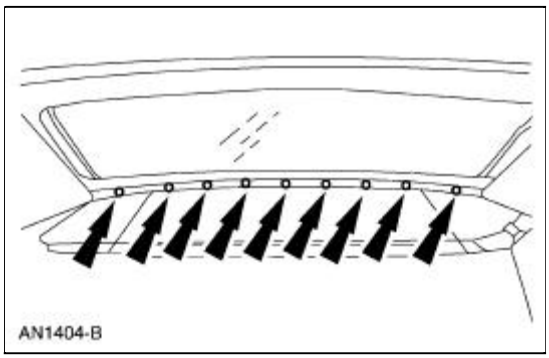


24. Install the side quarter trim panel. For additional information, refer to Section 501-05 .

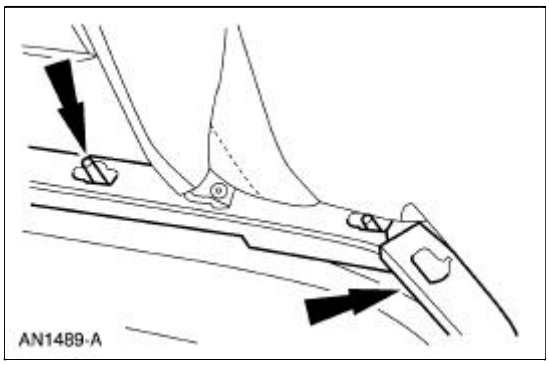
Convertible Top Assembly —Rear Window Glass

Removal

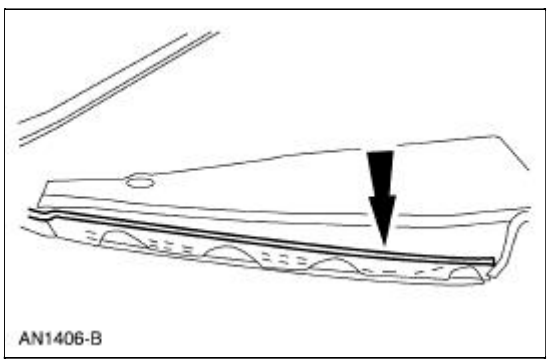
1. Remove the rear defrost connectors if necessary.
2. Remove the nuts retaining the well sling and convertible top tacking strips.



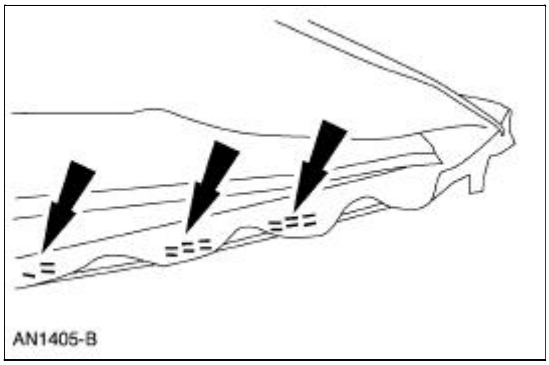
3. Remove the three tacking strips.



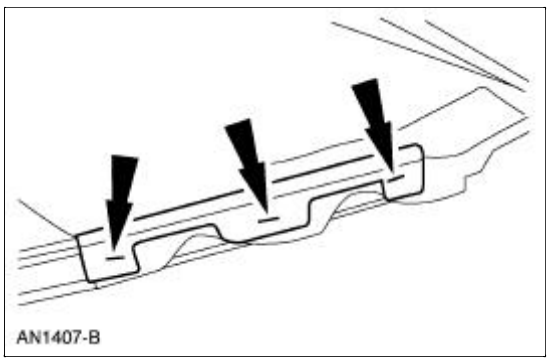
4. Mark the top of the convertible top skin around the top of all three tacking strips with a grease pencil.



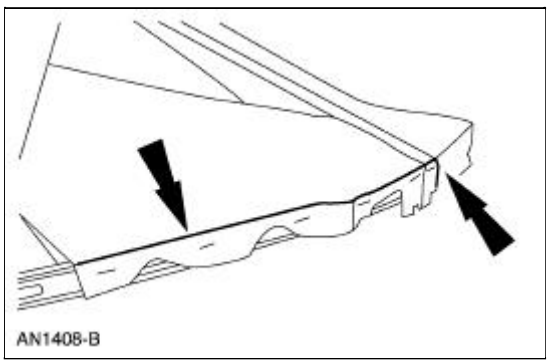
5. Remove the visible staples.



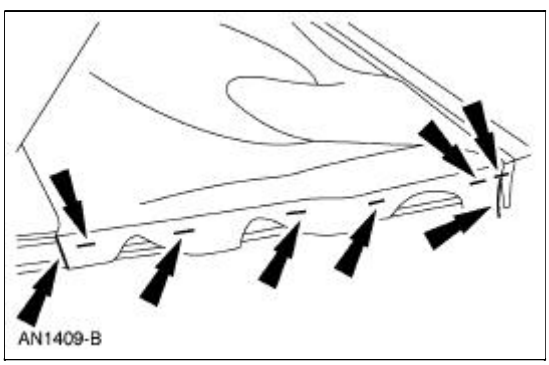
6. Remove the water diverter.



7. Mark the winter seal at the top, bottom and the forward edge of the rear tacking strip.

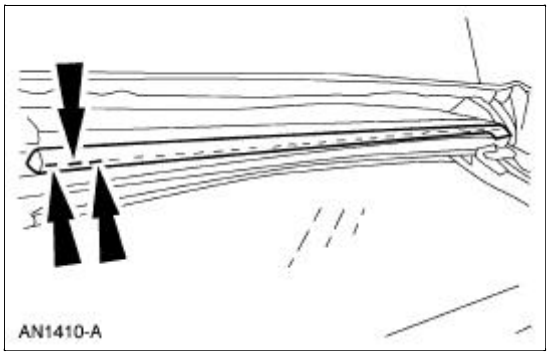


8. Remove the winter seal.

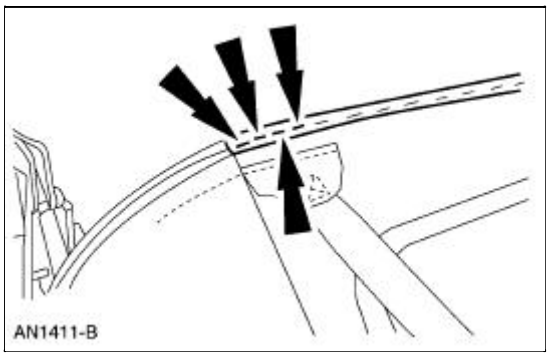


9. Lift the rear cover assembly over the convertible top exposing the top of the rear window glass assembly.

10. Remove all of the staples in the cover assembly along the number four bow.



11. Remove all of the staples in the rear window glass assembly along the number four bow.

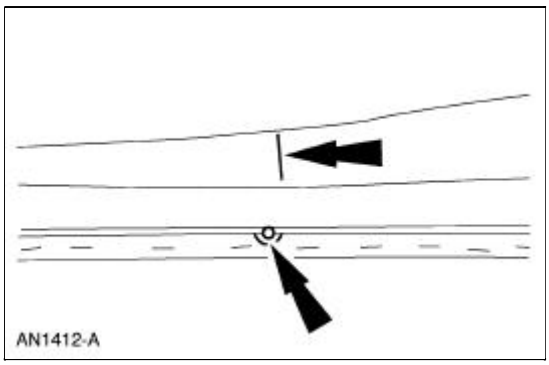


12. Remove the rear window glass assembly.

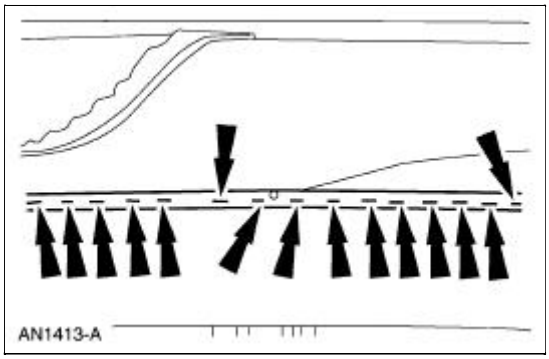
Installation

1. Overlay the new rear window glass assembly over the old rear window glass assembly and transpose the markings with a grease pencil.

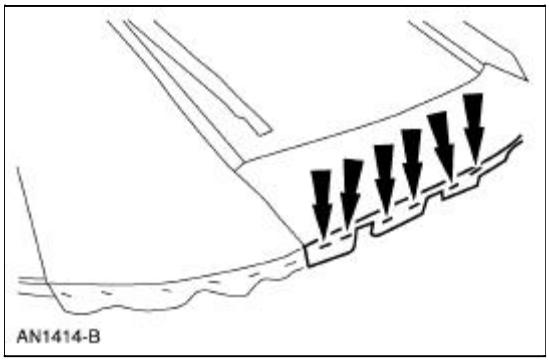
2. Center the V-notch on the new rear window glass assembly to the center mark on the top of the number four bow.



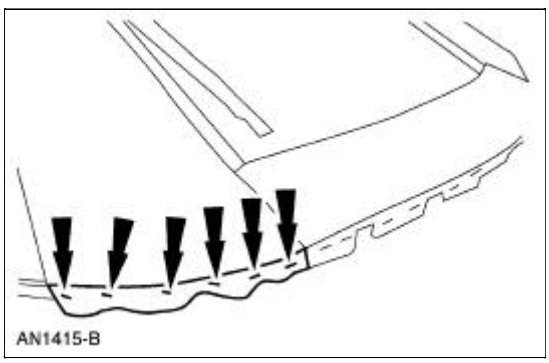
3. Align the rear window glass assembly to the top groove of the number four bow and staple the entire length.



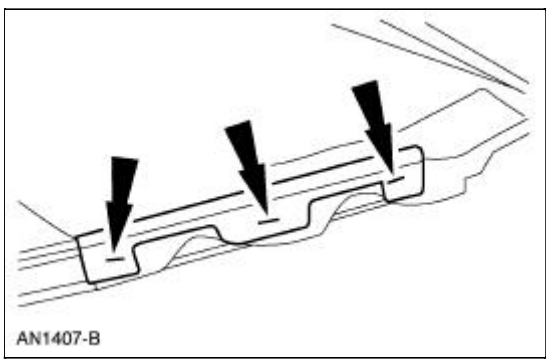
4. Starting at the center of the lower rear tacking strip, align the top edge of the rear belt to the reference line and staple.



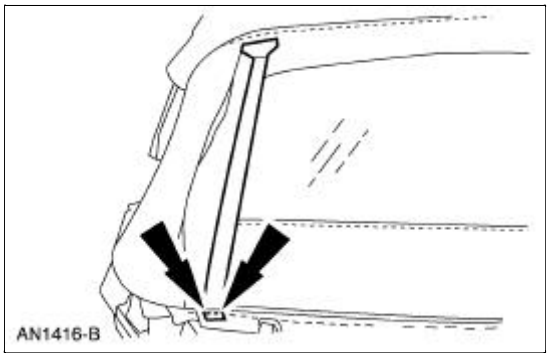
5. Repeat the procedure for both rear tacking strip sides.



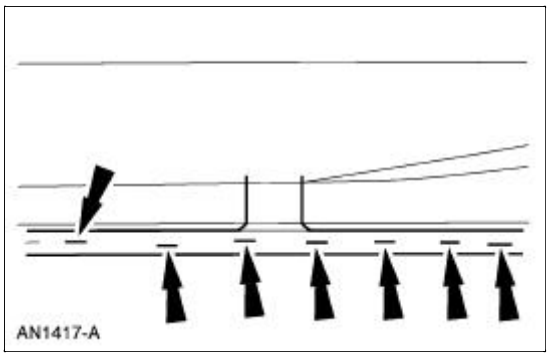
6. Position and staple the water diverter.



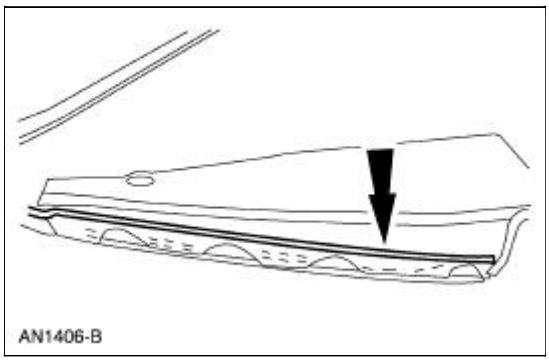
7. If necessary, align the elastic straps with the edge of the rear window glass assembly and staple in place.



8. Align the center line mark on the cover assembly to the V-notch on the rear window glass assembly and staple the entire length.

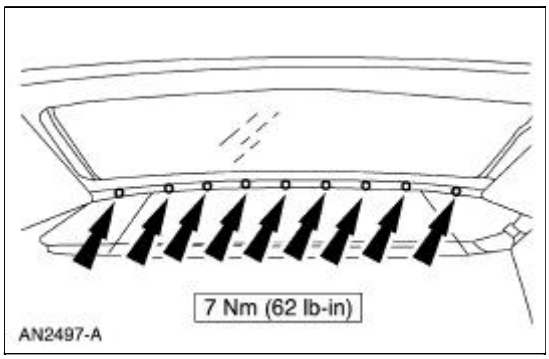


9. Align the top edge of the quarter tacking strip to the reference line on the convertible top cover and staple.



10. Install the tacking strips over the body studs.

11. Tighten the tacking strip nuts.



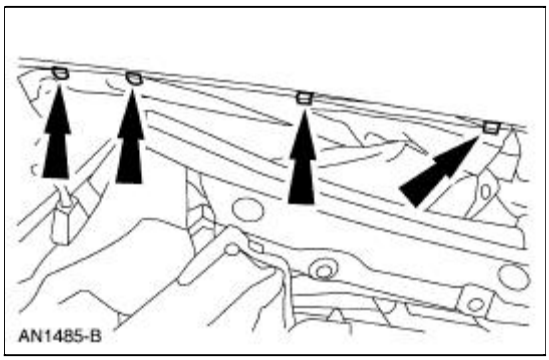
12. Install the well sling.

13. If necessary, connect the rear defroster connectors.

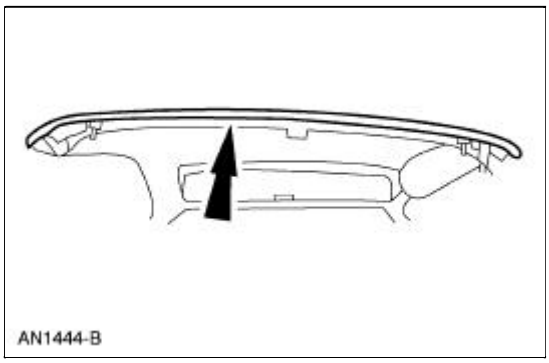
Convertible Top Material

Removal

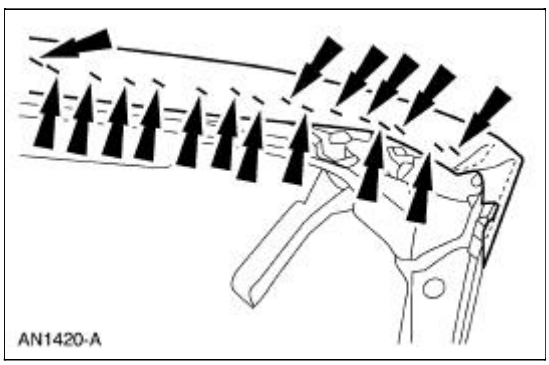
1. Remove the rear exterior trim mouldings.
2. Remove the clips.



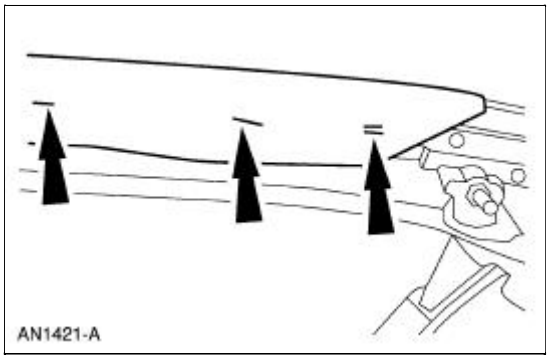
3. Remove the 13 Torx® screws and the seal compression panel.



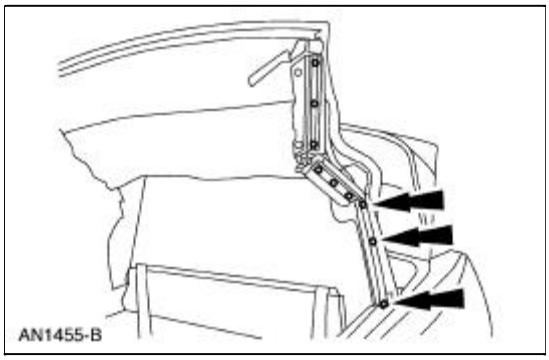
4. Remove the staples.



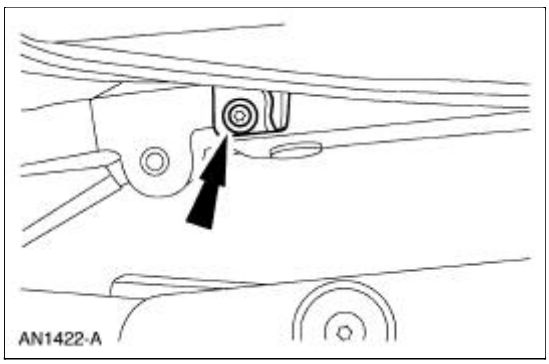
5. Remove the staples from the number one bow.



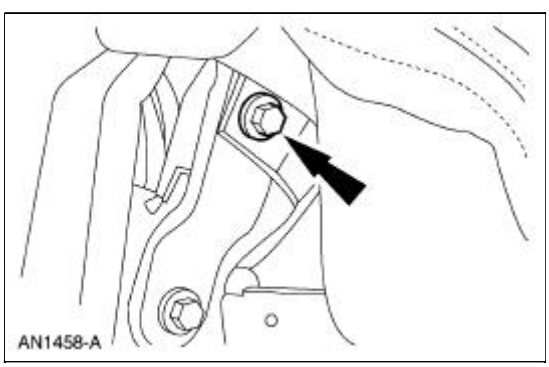
6. Remove the rear rail weatherstrip retainers from each side.



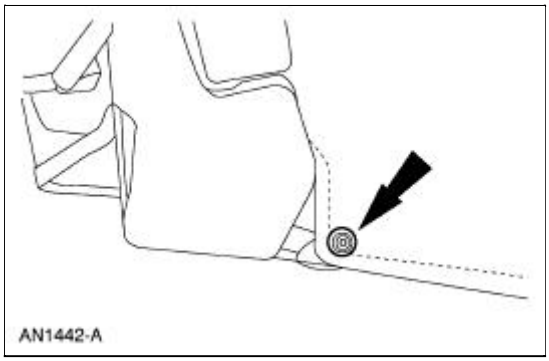
7. Raise the front of the folding top assembly.
8. Remove the screw and the center elastic straps.



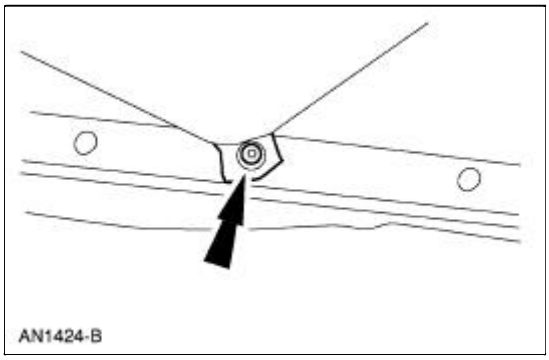
9. Remove the speed nut and the front elastic straps.



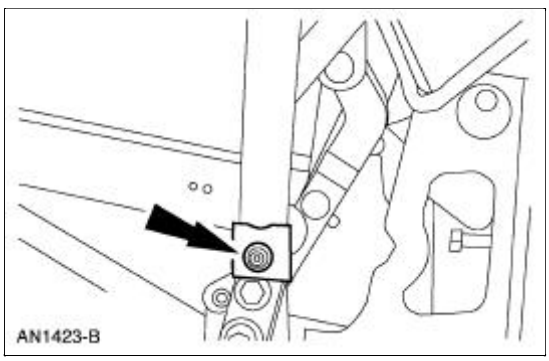
10. Remove the screw and the front elastic strap.



11. Remove the screw and the rear elastic straps.

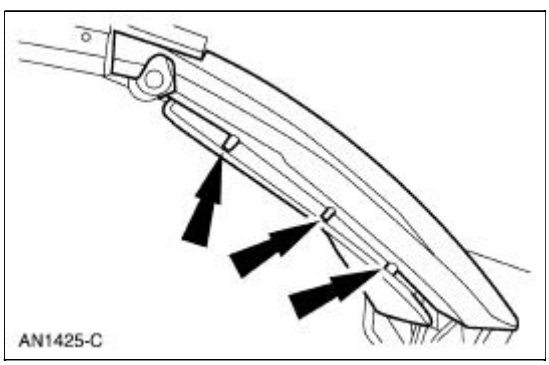


12. Remove the screw and the rear elastic straps.

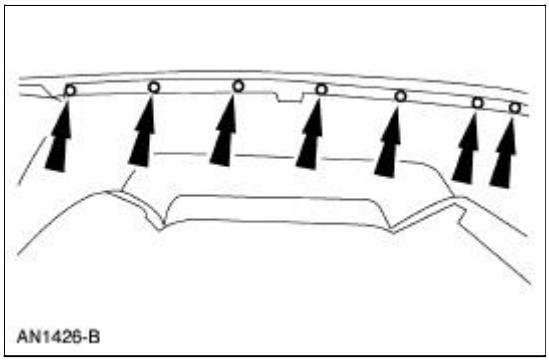


13. **NOTE:** Install new plastic roof headlining retaining pins if they were removed.

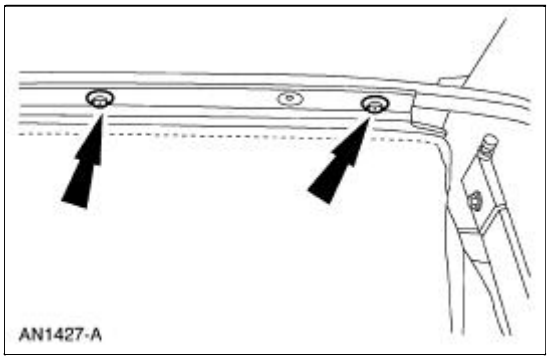
    Disengage the roof headlining from the folding roof rear side rail.



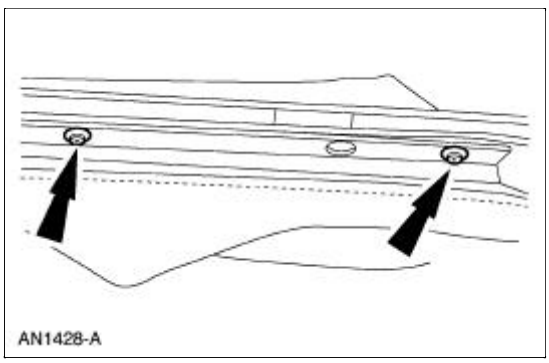
14. Remove the screws from the number four bow.



15. Remove the screws from the number three bow.

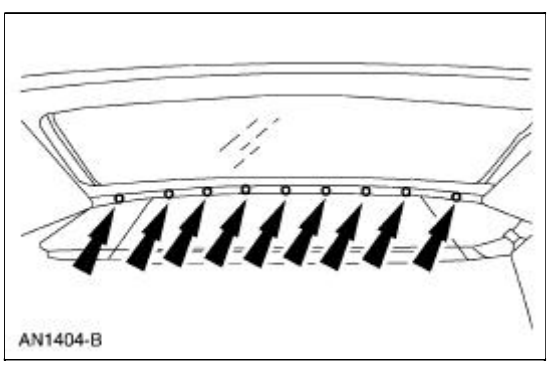


16. Remove the screws from the number two bow.

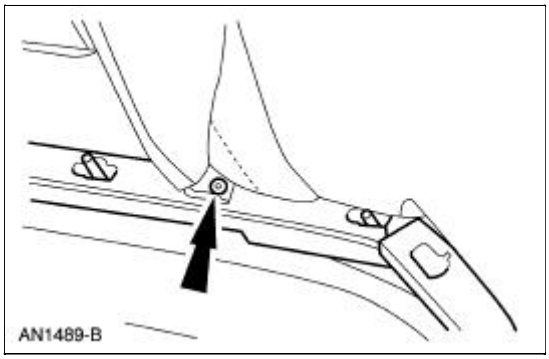


17. Remove the headlining.

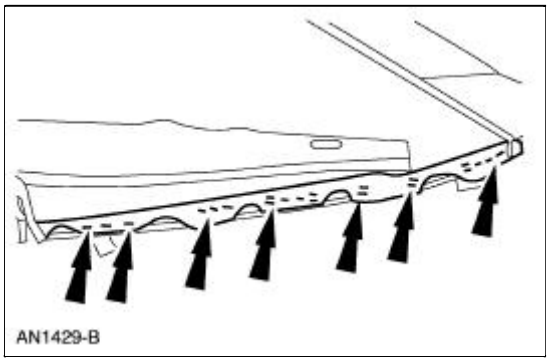
18. Remove the nuts retaining the well sling and convertible top tacking strips.



19. Remove screws and the three tacking strips.

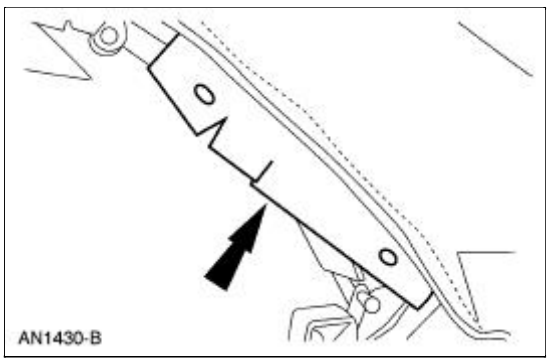


20. Remove the staples.

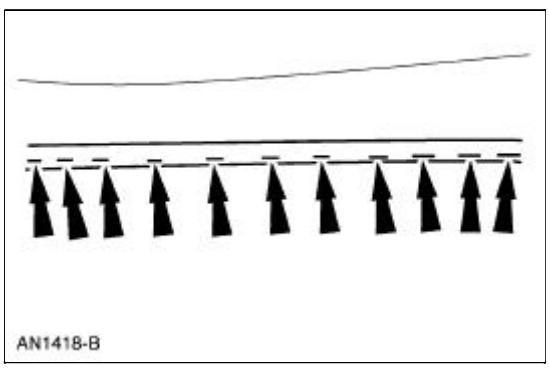


21. **NOTE:** All adhesive tape must be removed from the folding roof rear side rail.

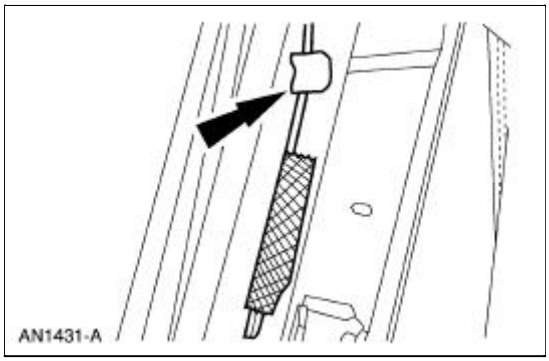
    Pull the roof outside cover flaps to disengage from each folding roof rear side rail.



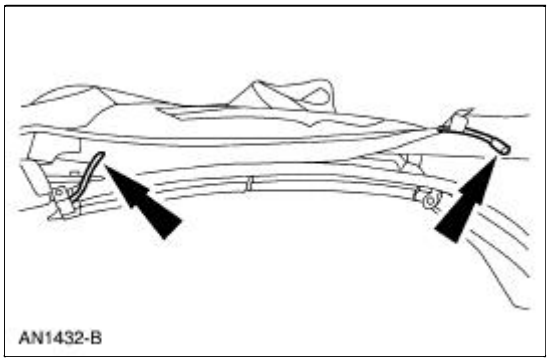
22. Remove the staples from the entire length of the number four bow.



23. Disengage the cable from each side.

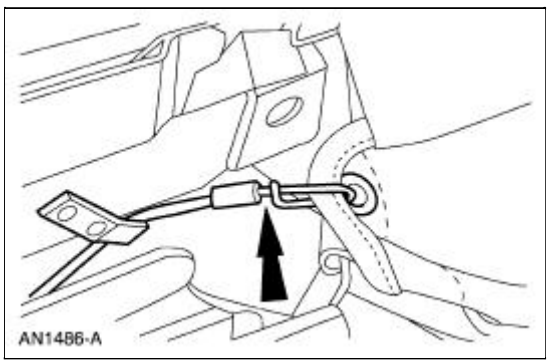


24. Remove the cable from the cover assembly.



25. **NOTE:** The cable is spring-loaded. Use care not to lose the cable end during disassembly.

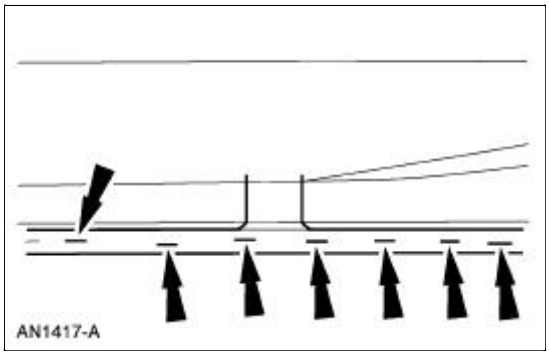
    Disconnect the trim tension cable.



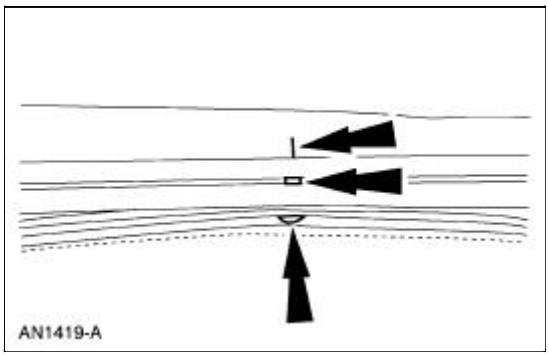
26. Remove the cover from the frame.

Installation

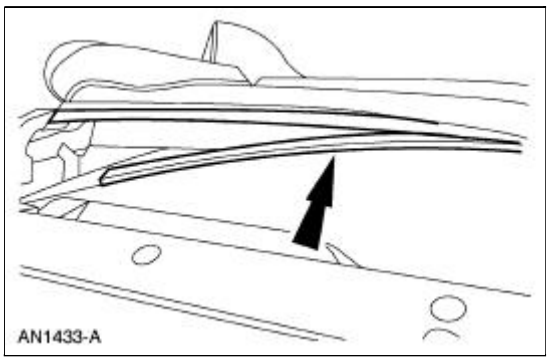
1. Align the center mark on the cover assembly to the V-notch on the rear glass assembly and staple the entire length of the number four bow.



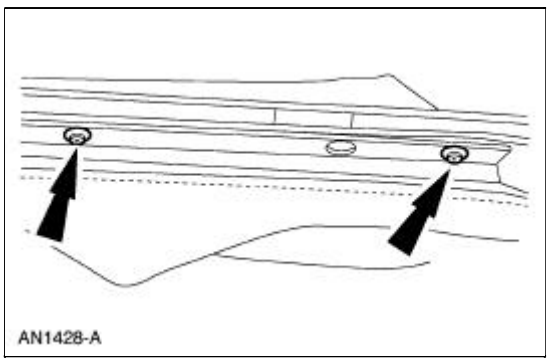
2. Center the listing sleeve on the bottom of the folding top number two bow.



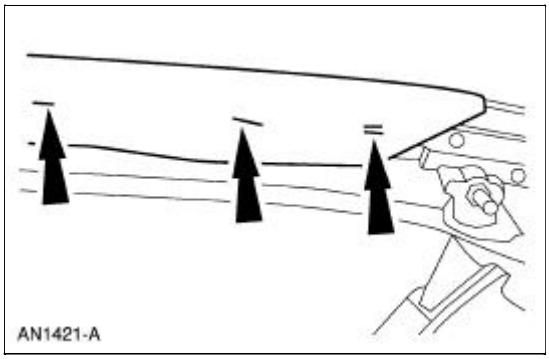
3. Position the listing sleeve onto the number two bow with the headliner retainer.



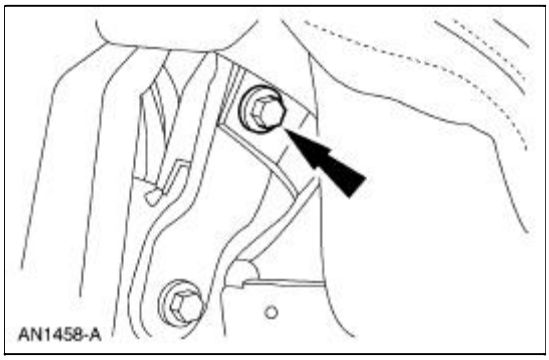
4. Install the screws for the number two bow.



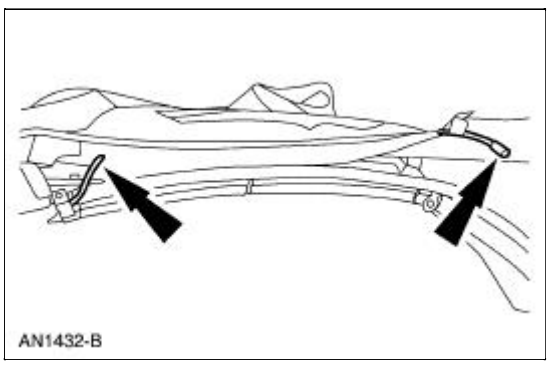
5. Pull the roof headlining over the top of the folding top header (number one bow) and staple the underside.



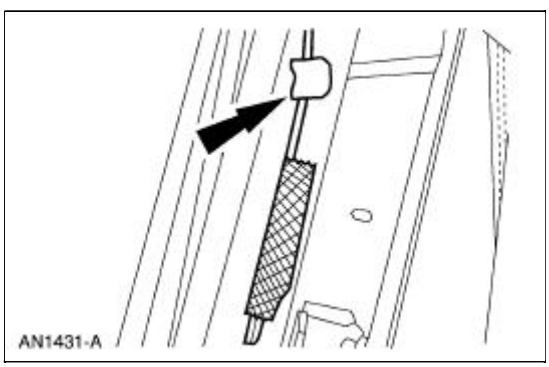
6. Connect the headliner front elastic strip with the speed nut.



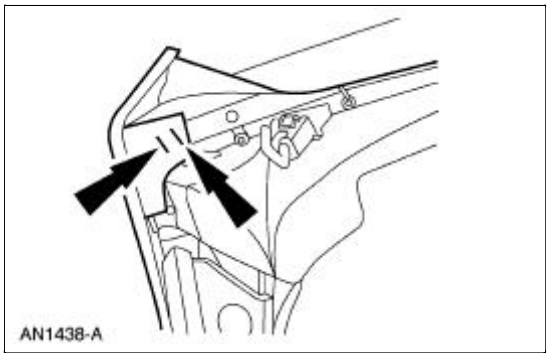
7. Pull the folding top tension cable through the retainer in the roof outside cover.



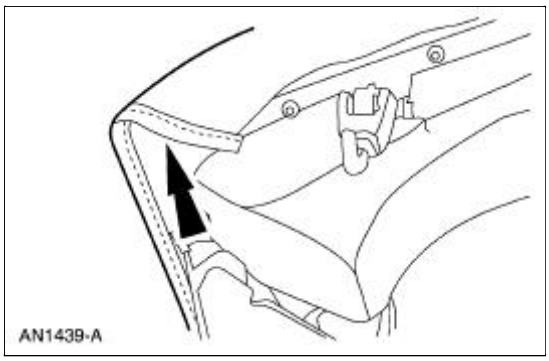
8. Engage the cable to the spring retainer.



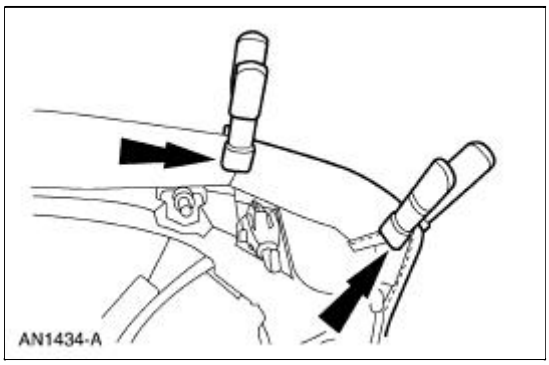
9. Staple the flap at the front of the roof outside cover to the tacking strip on the underside of the folding top header panel.



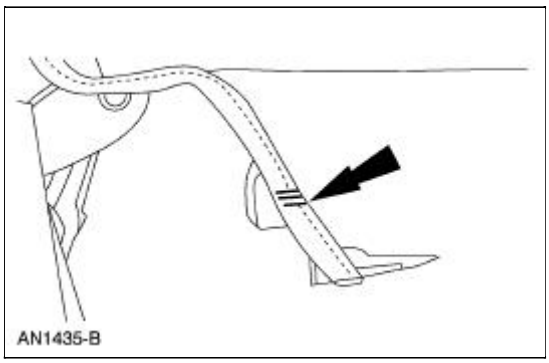
10. Pull the front corner of the roof outside cover over the folding top header and staple to the tacking strip.



11. Fold the tab under the folding top header (number one bow) and clamp.

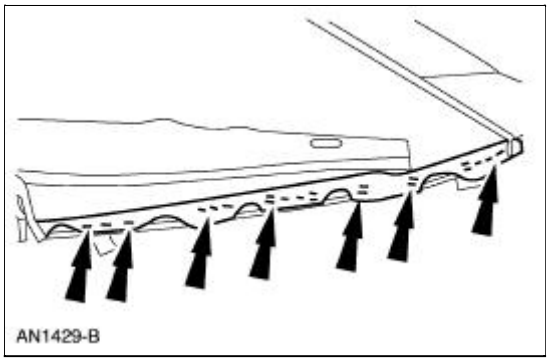


12. Staple the rear of the roof outside cover to the side tacking strip.

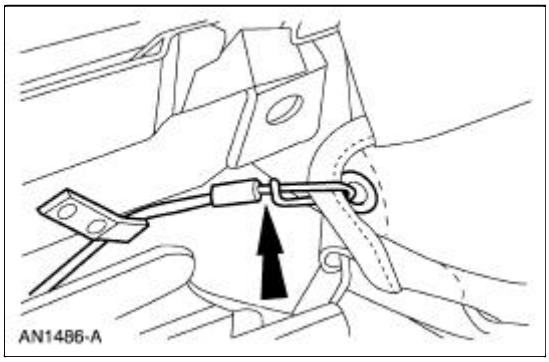


13. **NOTE:** Make sure there are no wrinkles in the roof outside cover.

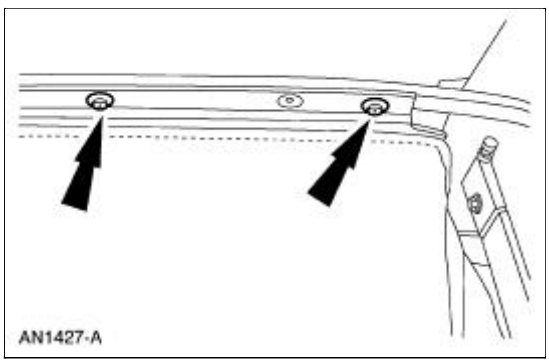
    Install the remaining staples along the rear of the roof outside cover.



14. Install the folding top tension cable through the eyelet of the roof outside cover.

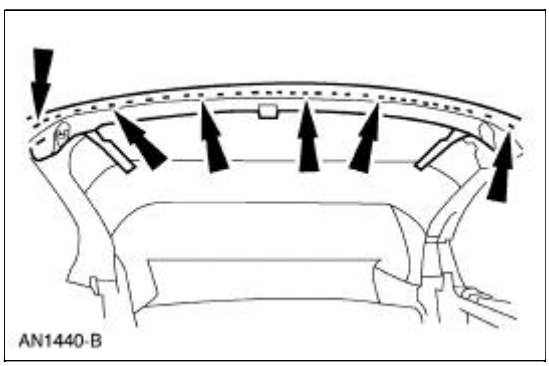


15. Position the headliner retainer to the number three and four bow and install the screws.

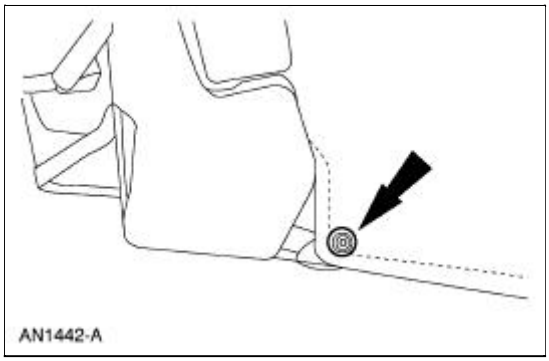


16. **NOTE:** Make sure there are no wrinkles on the top of the roof outside cover.

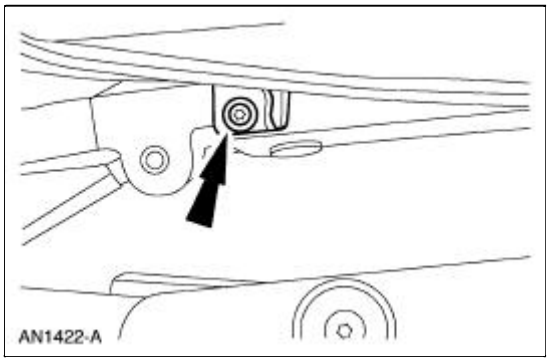
    Support the top and staple the underside of the folding top header panel from the center to the sides.



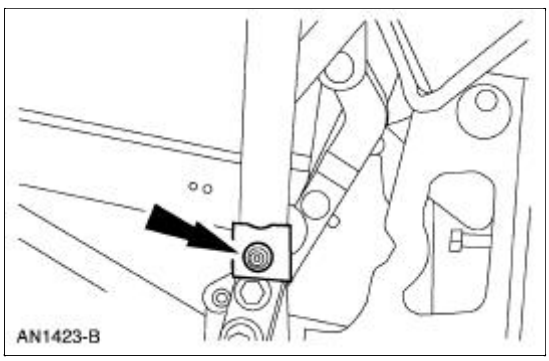
17. Install the screws through the headlining and the strap into the front side rail.



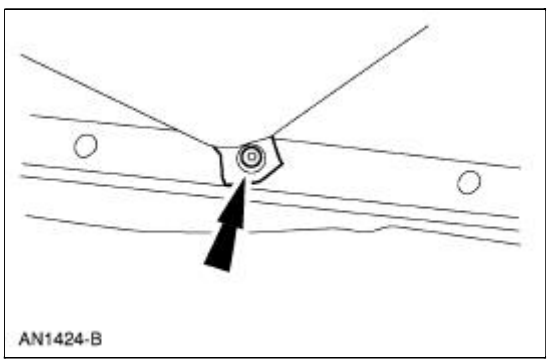
18. Position the center elastic strap to the rear of the folding top center rail and install the screw.



19. Position the rear elastic strap and install the screw.



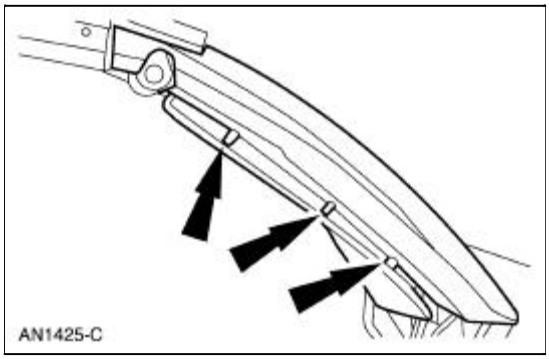
20. Position the rear elastic strap and install the screw.



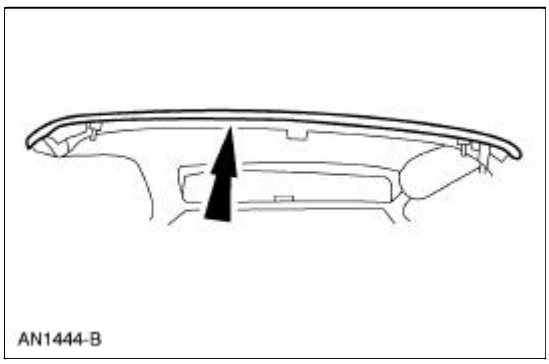
21. Trim the excess roof outside cover along the rear tacking strips and around the tacking strip mounting holes.

22. **NOTE:** Install new plastic roof headlining retaining pins if they were removed.

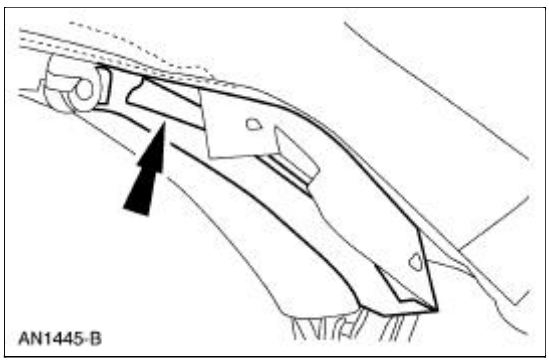
Engage the roof headlining into the folding roof rear side rail.



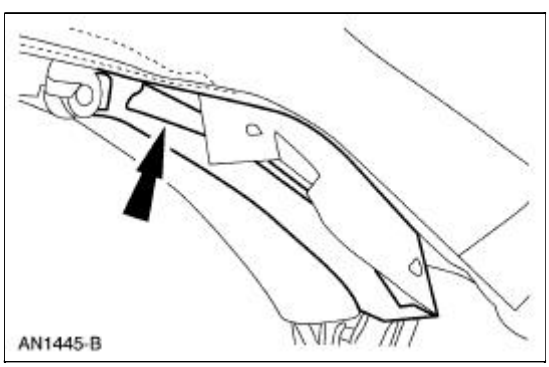
23. Install the seal compression panel.



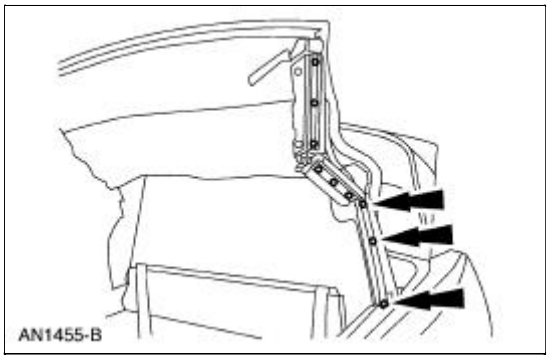
24. Install two-sided tape on the rear rail.



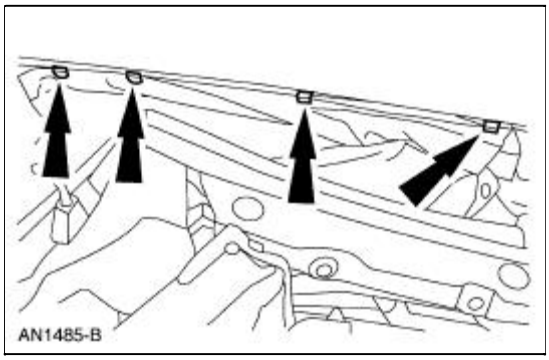
25. Install the flap onto the rear rail.



26. Install the rear weatherstrip retainers.



27. Install the clips.



28. Install the exterior mouldings.

Stay Pad —Convertible Top

Removal

1. Remove the convertible top material. For additional information, refer to Convertible Top Material in this section.

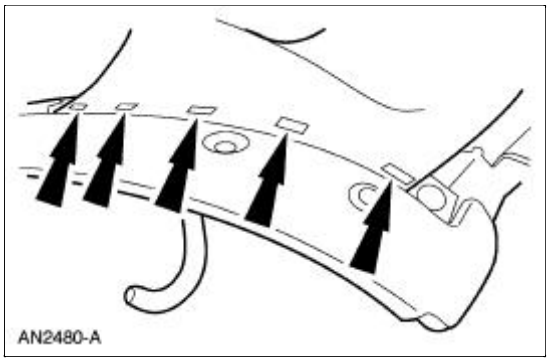
2. Remove the rear window glass. For additional information, refer to Convertible Top Assembly—Rear Window Glass in this section.

3. **NOTE:** Mark the old stay pad staple locations and transfer to the new stay pads.

   Remove the staples from all of the bows.

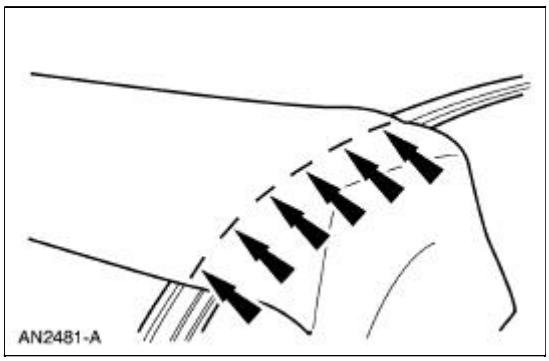
Installation

1. Staple the stay pad to the number one bow.

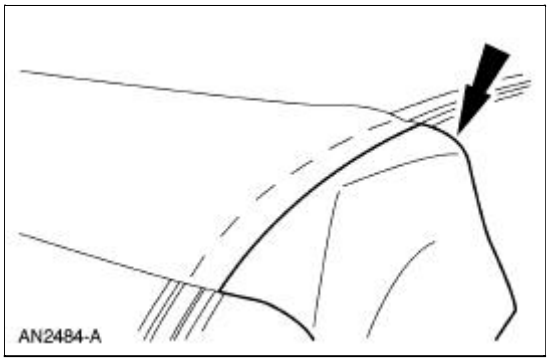


2. **NOTE:** The stay pad should be tight between the number one and number four bows.

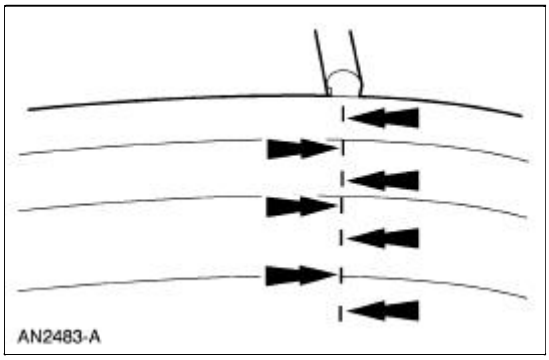
   Staple the stay pad to the number four bow.



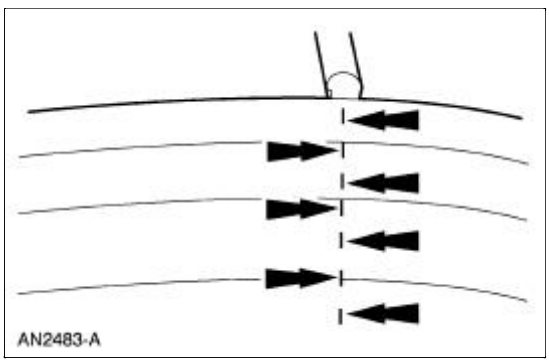
3. Cut the excess stay pad material from the rear of the number four bow.



4. Staple the stay pad to the number two bow.



5. Staple the stay pad to the number three bow.



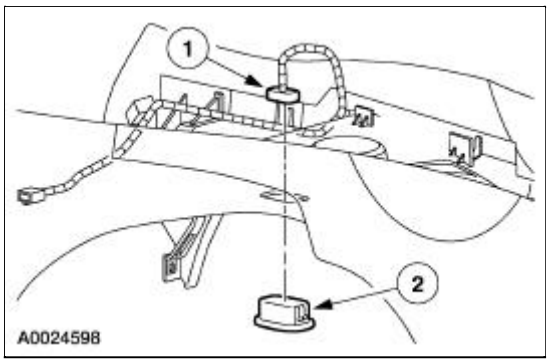
6. Install the rear window glass. For additional information, refer to Convertible Top Assembly—Rear Window Glass in this section.

7. Install the convertible top material. For additional information, refer to Convertible Top Material in this section.

Convertible Top Switch

Removal and Installation

1. Remove the floor console. For additional information, refer to Section 501-12 .
2. Remove the convertible top switch.
    1. Disconnect the electrical connector.
    2. Release the clips.



3. To install, reverse the removal procedure.

Hydraulic System, Lift Cylinder and Motor

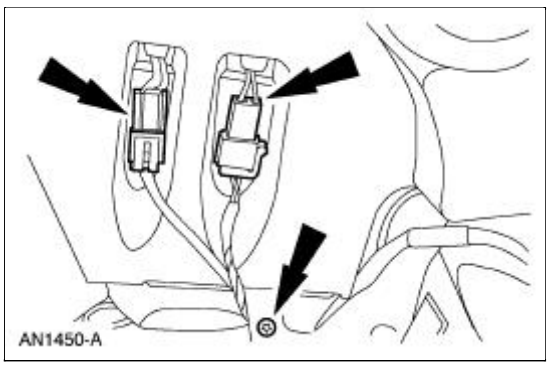
Removal

NOTE: The convertible top hydraulic components are removed from the vehicle as an assembly. The hydraulic components are individually repaired and the system must be bled before being installed into the vehicle.

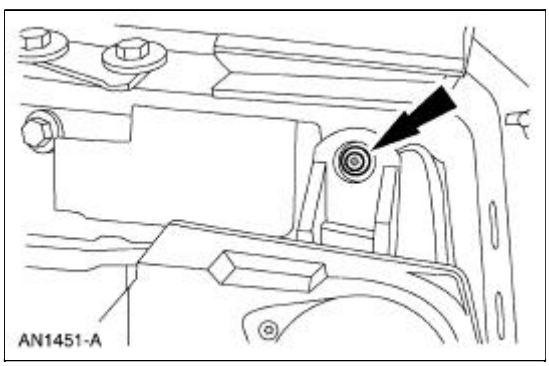
Hydraulic system

1. Unlatch the convertible top.
2. Remove the rear quarter trim panel. For additional information, refer to Section 501-05 .
3. **NOTE:** This step applies to vehicles equipped with the Mach sound system.

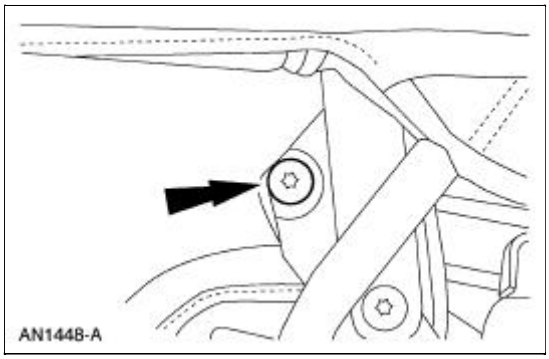
   Remove the screw and disconnect the electrical connectors.



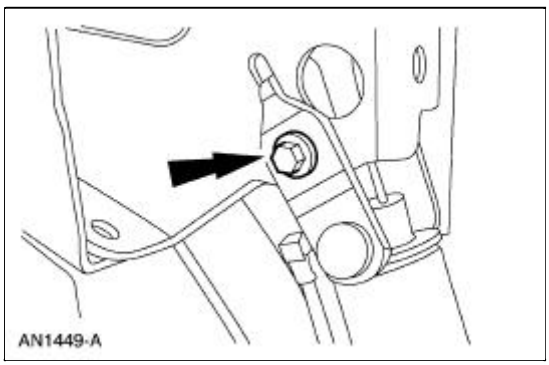
4. Remove the screws.



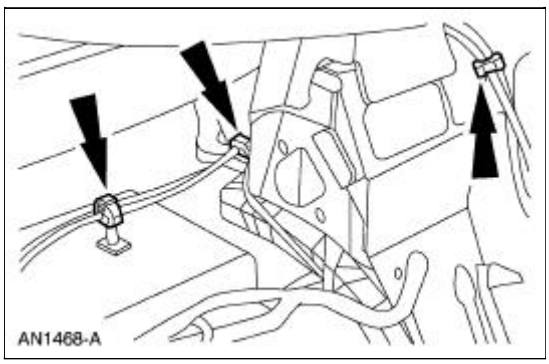
5. Remove the speakers.
6. Remove the two cylinder rod mounting bolts.



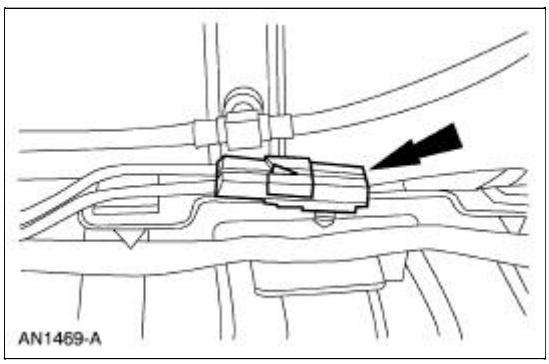
7. Fully lower the lift cylinders.
8. Remove the nuts and the lift cylinders.



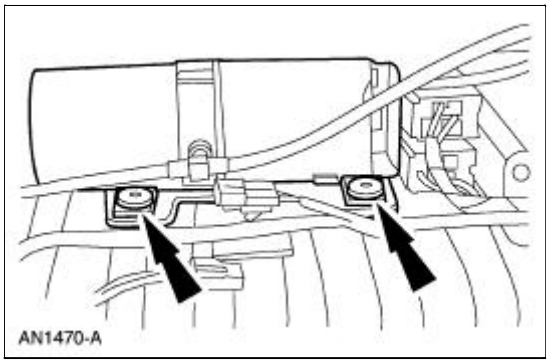
9. Release the hydraulic line retainers on each side.



10. Disconnect the motor electrical connector.



11. Pull up on the motor to release the rubber retainers.

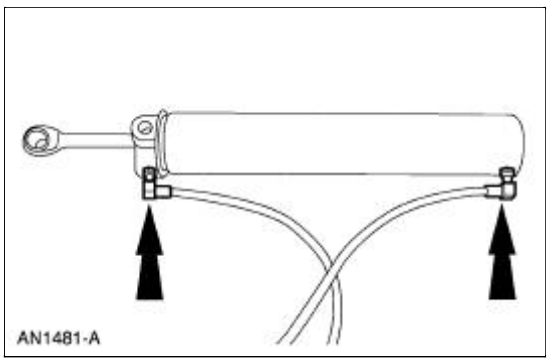


12. Remove the motor and cylinders as an assembly.

Lift cylinder

13. **NOTE:** Prior to their removal, mark the upper and lower hydraulic lines to insure correct installation on the new cylinder.

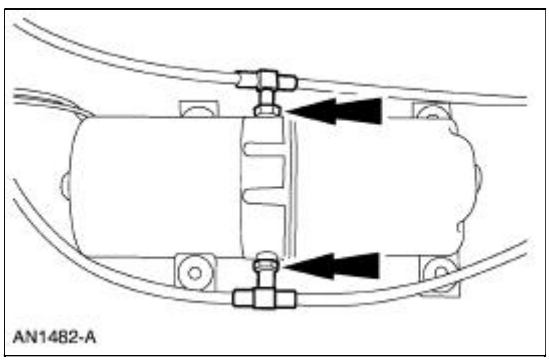
    Remove the hydraulic lines from the cylinder.



Motor assembly

14. **NOTE:** Prior to removal, mark the hydraulic lines to insure correct installation of the motor assembly.

    Remove the hydraulic lines from the motor assembly.



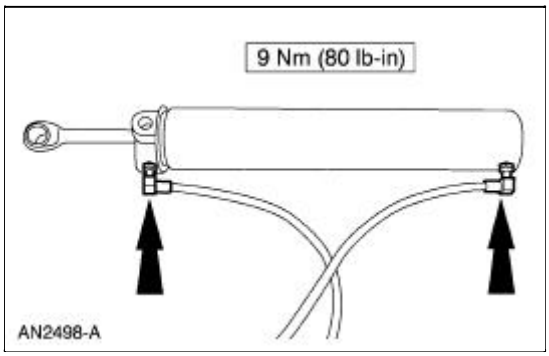
Installation

Lift cylinder

1. **NOTE:** Be sure that each fitting is installed in the correct position on the folding top hydraulic component.

NOTE: Make sure that the tetra seal is installed in the bottom of each of the folding top hydraulic cylinder ports before attaching the upper and lower hose fittings.

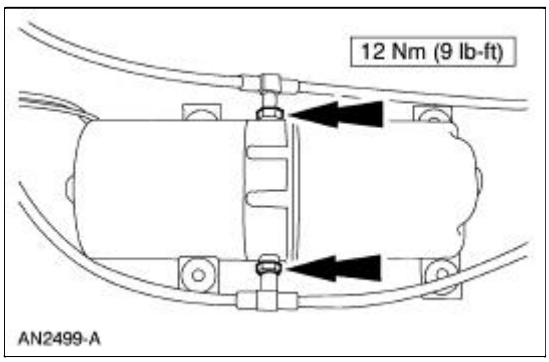
Install the hydraulic lines using a thread locker onto the lift cylinder.



Motor assembly

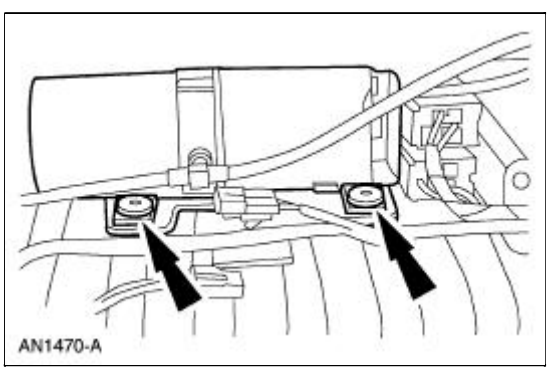
2. **NOTE:** Be sure that each fitting is installed in the correct position on the folding top hydraulic component.

   Install the hydraulic lines using a thread locker onto the motor assembly.

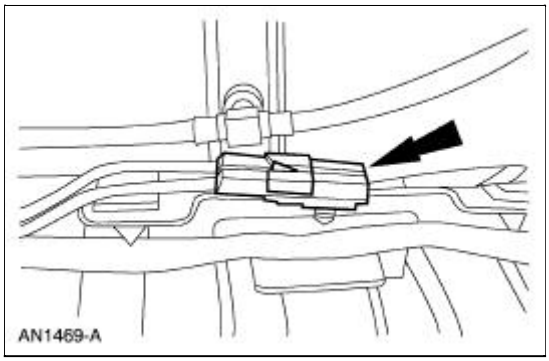


Hydraulic system

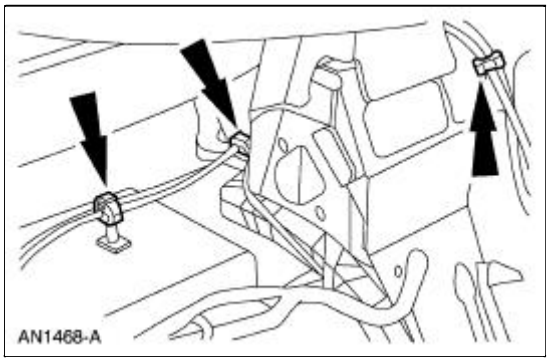
3. Bleed the hydraulic system. For additional information, refer to System Bleeding in this section.
4. Install the motor and cylinders as an assembly.
5. Position the motor assembly.



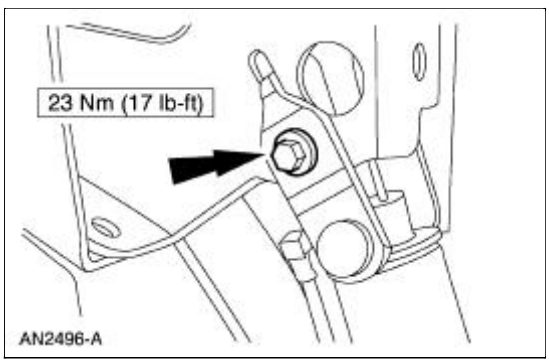
6. Connect the motor electrical connector.



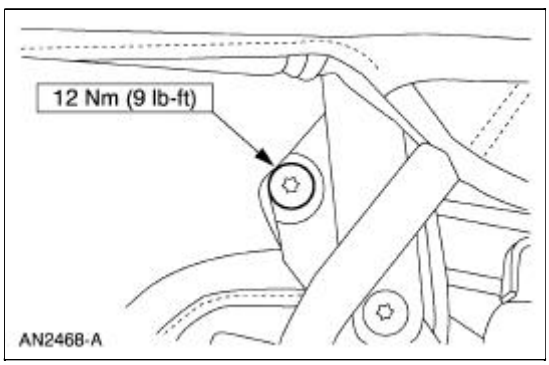
7. Engage the hydraulic line retainers on each side.



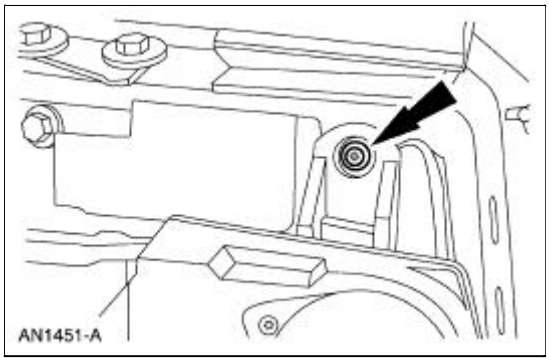
8. Position the lift cylinders and install the nuts.



9. Install the two cylinder rod mounting bolts.

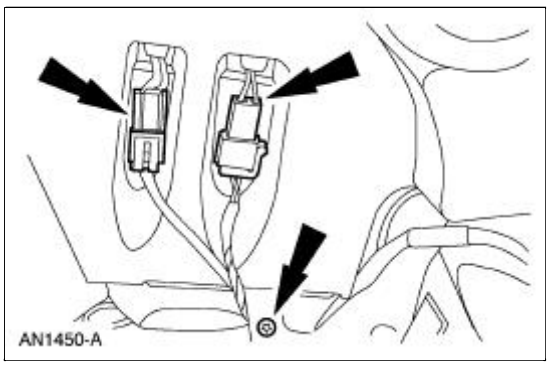


10. Install the speakers.
11. Install the screws.



12. **NOTE:** This step applies to vehicles equipped with the Mach sound system.

    Install the screw and connect the electrical connectors.



13. Install the rear quarter trim panel. For additional information, refer to Section 501-05 .
14. Latch the convertible top.

Torque Specifications

Description	Nm	lb-ft	lb-in
Front bumper bolts	40	30	—
Rear bumper bolts	23	17	—
Front bumper cover nuts	5	—	44
Rear bumper cover nuts	7	—	62
Exhaust outlet pipe bumper bracket bolts	18	13	—
Rear bumper tongue to frame rail bolts	63	46	—
Rear bumper brace bolts	48	35	—
Intercooler radiator bracket bolts	20	15	—

Bumpers

CAUTION: Never apply excessive heat to the bumper cover surface. Heat could cause distortion of the bumper cover.

The bumper systems consist of the following components:

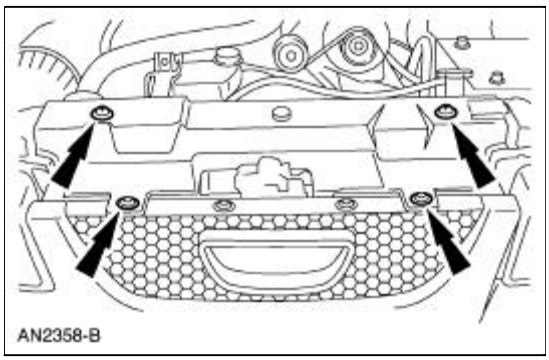
- front bumper
- front bumper cover
- front bumper cover (Cobra)
- front bumper isolator
- rear bumper
- rear bumper brace
- rear bumper cover
- rear bumper cover (Cobra)
- rear bumper isolator

Front Bumper Cover

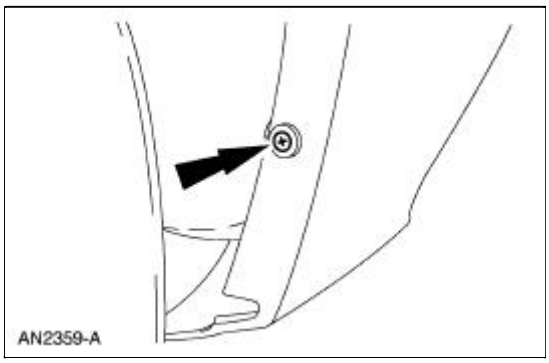
Removal and Installation

NOTE: Mustang shown, GT and Cobra similar.

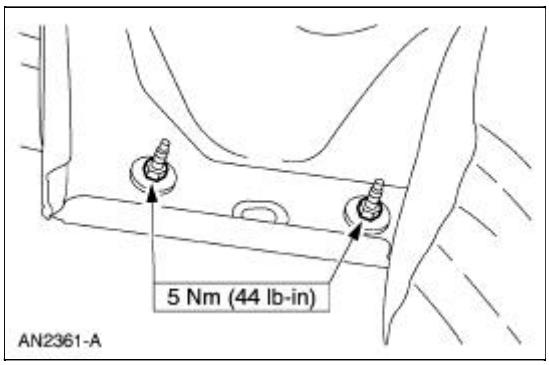
1. Remove the pin-type retainers and the radiator upper sight shield.



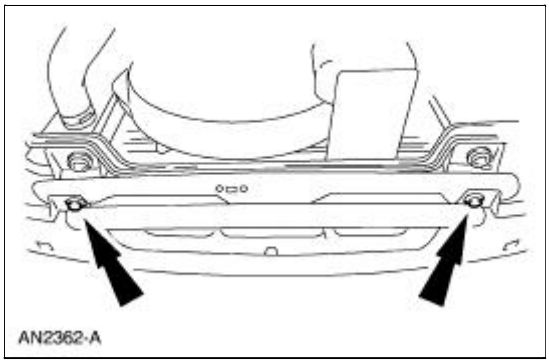
2. Remove the two pin-type retainers (one each side).



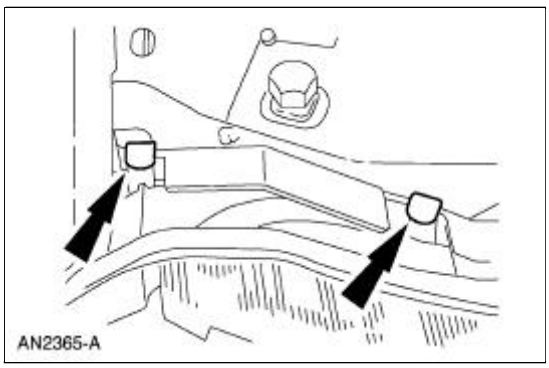
3. Remove the four front bumper cover nuts (two each side).



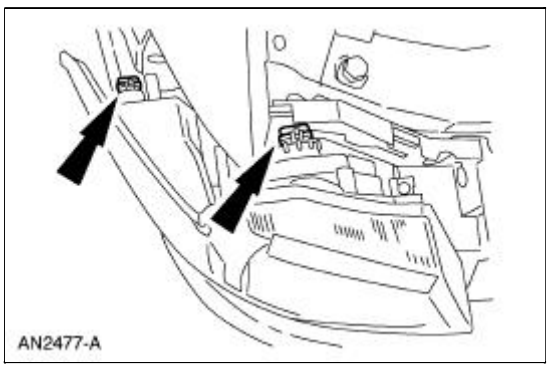
4. Remove the lower bumper cover pin-type retainers.



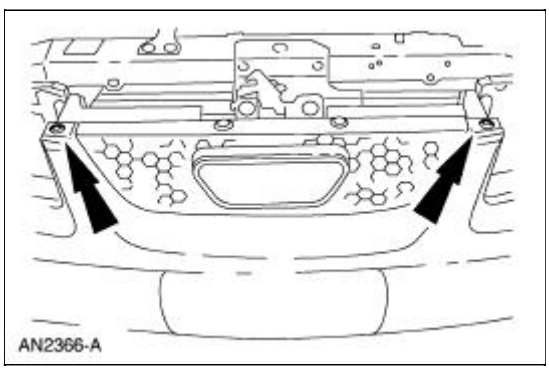
5. Remove the four headlamp mounting clips.



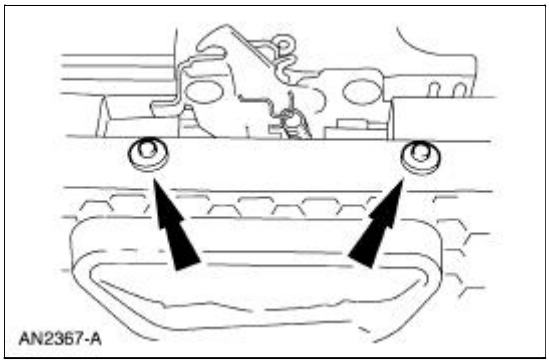
6. Disconnect the parking lamp and the headlamp electrical connectors (two each) and remove the two headlamps.



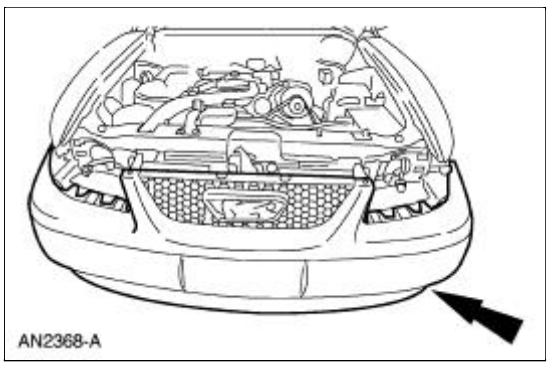
7. Remove the pin-type retainers.



8. If equipped, remove the pin-type retainers.



9. If equipped, disconnect the fog lamp electrical connectors.
10. Lift up on the tabs and remove the front bumper cover.

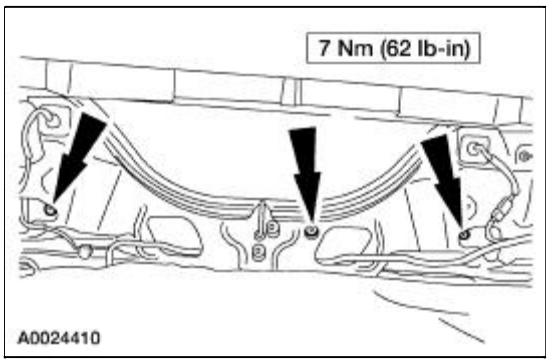


11. To install, reverse the removal procedure.

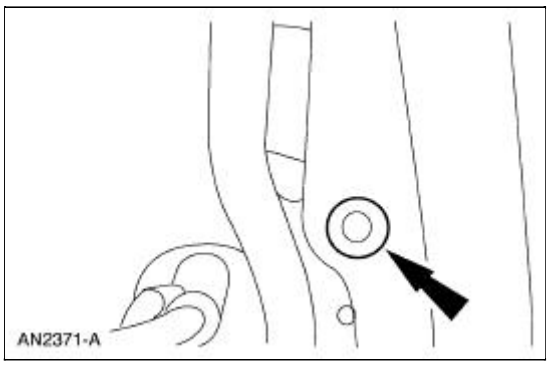
Rear Bumper Cover

Removal and Installation

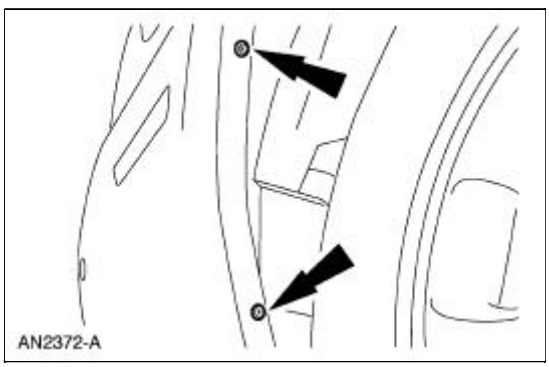
1. Remove the luggage compartment trim panel covers.
2. Remove the seven rear bumper cover nuts.



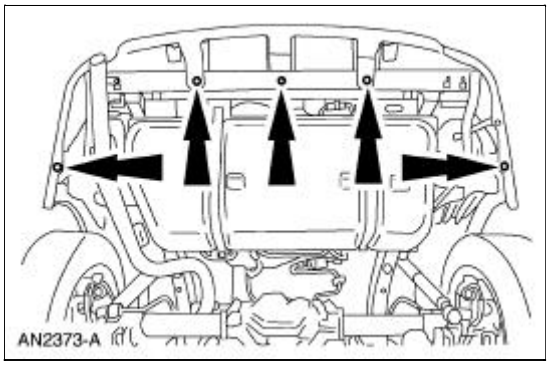
3. Remove the fuel drain hose.



4. Remove the four bumper cover screws (two each side).



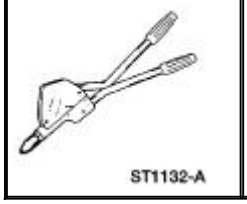
5. Remove the pin-type retainers and the rear bumper cover.



6. To install, reverse the removal procedure.

Front Bumper

Special Tool(s)

 ST1132-A	Heavy-Duty Riveter 501-D011 (D80L-23200-A)

Removal and Installation

All vehicles except Cobra

1. Remove the front bumper cover. For additional information, refer to Front Bumper Cover in this section.

Cobra

2. Remove the charge air cooler. For additional information, refer to Section 303-12 .

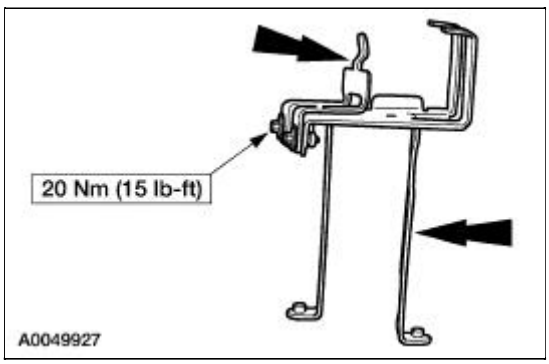
All vehicles

3. Remove the two rivets and the front bumper isolator.

Cobra

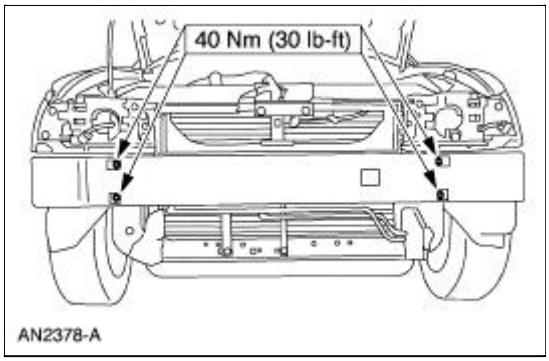
4. **NOTE:** The charge air cooler bracket is removed for clarity.

   Remove the four bolts and the two intercooler radiator brackets.



All vehicles

5. Remove the bolts and the front bumper.



6. To install, reverse the removal procedure.

Rear Bumper

Removal and Installation

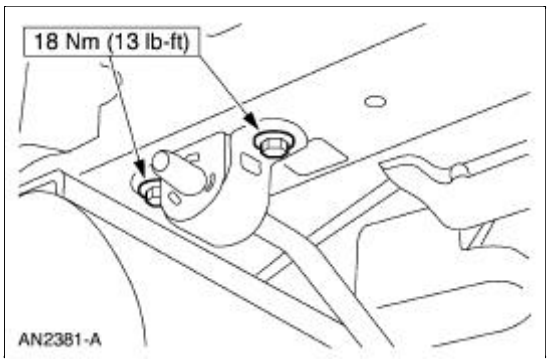
All vehicles

1. Remove the rear bumper cover. For additional information, refer to Rear Bumper Cover in this section.

2. Remove the rear bumper cover isolator.

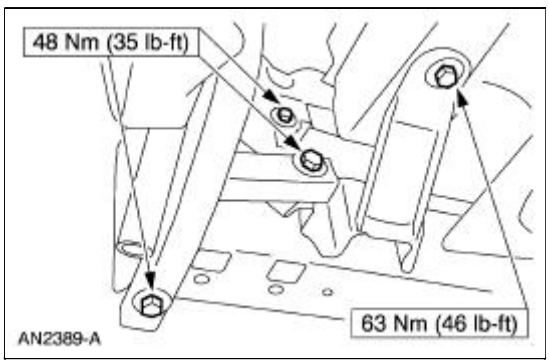
Vehicles with 4.6L engines

3. Remove the bolts and the exhaust outlet pipe bumper bracket.

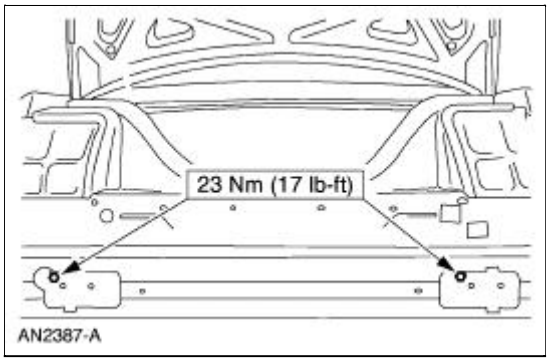


All vehicles

4. Remove the rear bumper brace and tongue bolts.



5. Remove the bolts and the rear bumper.



6. To install, reverse the removal procedure.

Torque Specifications

Description	Nm	lb-ft
D-Ring bolt	40	30
Front safety belt retractor bolt, convertible only	30	22
Front safety belt retractor nut, convertible only	30	22
Safety belt retractor bolt	40	30
Safety belt buckle to seat frame nut	40	30
Safety belt buckle to floorpan bolt	40	30
Safety belt anchor bolt	40	30
Tether anchor bolts	20	15

Safety Belt System

WARNING: All safety belt assemblies include retractors, buckles, front seat belt buckle support assemblies (slide bar, if so equipped), shoulder belt height adjuster (if equipped), child safety seat tether bracket assemblies (if equipped) and attaching hardware should be inspected after any collision. Ford recommends new safety belt assemblies be installed unless a qualified technician finds the assemblies show no damage and operate correctly. Safety belt assemblies not in use during a collision should also be inspected and new assemblies installed if either damage or incorrect operation is noted.

WARNING: Each seating position in the vehicle has a specific safety belt assembly which consists of one buckle and one tongue. The safety belt assembly is designed to be used as a pair and is not to be used across seating positions.

A continuous-loop, single retractor active restraint system is used on this vehicle for both the front seats and the rear seats.

Safety Belt, Lap/Shoulder—Dual Locking Mode

WARNING: Rear-facing infant seats should never be placed in the front seats. Failure to follow these instructions may result in personal injury.

The dual locking mode retractor on the shoulder belt portion of the combination lap/shoulder safety belt for the front seat passenger and rear seat outboard passengers operates in two ways:

1. In the vehicle-sensitive (emergency locking) mode, the shoulder belt retractor will allow the occupant freedom of movement, locking tightly only on hard braking, hard cornering or impacts of approximately 8 km/h (5 mph) or more. The front and rear outboard safety belt retractors can also be made to lock by pulling/jerking on the belt.

2. In the automatic locking mode, the shoulder belt retractor locks automatically and remains locked when the combination lap/shoulder safety belt is buckled, restricting occupant movement. This mode provides tight lap/shoulder belt fit on the occupant and on a child safety seat or infant carrier installation restraint.

When the combination lap/shoulder belt is unbuckled and allowed to retract completely, the retractor switches to the vehicle sensitive (emergency) locking mode.

The automatic locking mode must be used when installing a child safety seat on the front passenger seat and rear outboard seats where dual locking retractors are provided.

Safety Belt Warning System

The safety belt warning indicator illuminates and a chime sounds to remind the occupants to fasten their safety belts.

The conditions of operation for the safety belt warning indicator and chime are as follows:

- If the driver safety belt is not buckled before the ignition switch is turned to ON, then the safety belt warning indicator illuminates for one to two minutes and the warning chime sounds for four to eight seconds.

- If the driver safety belt is buckled while the warning indicator is illuminated and the reminder chime is sounding, then the safety belt warning indicator and reminder chime turn off.
- If the driver safety belt is buckled before the ignition switch is turned to ON, then the safety belt warning light will turn on for 3 seconds and then off. The indicator chime will remain off.

Belt Minder (if equipped)

The Belt Minder feature is a supplemental warning to the safety belt warning function. This feature provides additional reminders to the driver that the driver's safety belt is unbuckled by intermittently sounding a chime and illuminating the safety belt warning lamp in the instrument cluster.

If...	Then...
The driver's safety belt is not buckled approximately 5 seconds after the safety belt warning light has turned off...	The Belt Minder feature is activated — the safety belt warning light illuminates and the warning chime sounds for 6 seconds every 30 seconds, repeating for approximately 5 minutes or until safety belt is buckled.
The driver's safety belt is buckled while the safety belt indicator light is illuminated and the safety belt warning chime is sounding...	The Belt Minder feature will not activate.
The driver's safety belt is buckled before the ignition switch is turned to the ON position...	The Belt Minder feature will not activate.

Safety Belt Extension

A safety belt that is too short even when fully extended can be lengthened. The safety belt extension (611C22) is available. This assembly will add approximately 20 cm (8 inches) to the length of the safety belt. Use the safety belt extension only if the safety belt is too short when fully extended. Do not use the safety belt extension to alter the fit of the shoulder belt across the torso. Safety belt extensions are available at no cost from any authorized Ford or Lincoln-Mercury dealer.

Lower Anchors and Tethers for Children (LATCH)

The lower anchors and tethers for children (LATCH) system is a standarized and uniform attachment system for installing child safety seats in passenger vehicles. LATCH-equipped child safety seats have two lower attachments that connect to the vehicle portion of the LATCH system.

The vehicle portion of the system consists of two attachment points (6-mm wires) bolted to the floor pan at both second row outboard seating positions. The attachment points protrude from the biteline between the seat cushion and seat backrest.

If a child safety seat was in use during a collision, inspect the vehicle portion of the system for damage. If any of the attachment points (6-mm wires) are damaged, a new one must be installed. See the appropriate removal and installation procedure in this section for service.

Attaching Safety Seats with Tether Straps

Some manufacturers make child safety seats that include a tether strap that goes over the back of the vehicle seat and attaches to an anchoring point. Other manufacturers offer the tether strap as an accessory. Contact the manufacturer of the child safety seat for information about ordering a tether strap.

WARNING: It is important that the bolt/anchor be securely tightened to specification. Otherwise, the child's safety seat may not be correctly secured and the child could be injured in case of a sudden stop or accident.

Instructions for installing the child safety belt anchor tether kit are included in the kit with the tether attachment.

Safety Belt System

Inspection and Verification

1. Verify the customer's concern by operating the active restraint system to duplicate the condition.
2. Inspect to determine if any of the following mechanical or electrical concerns apply:

Visual Inspection Chart

Mechanical	Electrical
● Inspect the safety belt webbing for integrity.	● Open fuse. ● Bare, broken or disconnected wire. ● Connector not tightly engaged. ● Safety belt warning indicator lamp burned out or broken.

3. If the inspection reveals an obvious concern(s) that can be readily identified, repair as required. With the exception of removing a twist from the safety belt webbing, do not attempt to repair a component of the safety belt system; new components must be installed.
4. If the concern remains after the inspection, determine the symptom. GO to Symptom Chart .

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
● The safety belt warning chime does not operate, the safety belt warning indicator lamp is OK	● Virtual image cluster (VIC). ● Circuitry. ● Driver seat module.	● REFER to Section 413-01 .
● The safety belt warning indicator lamp does not operate, the safety belt warning chime is OK	● Burned-out bulb. ● Circuitry. ● Driver seat module.	● REFER to Section 413-01 .
● Neither the safety belt warning chime nor the safety belt warning indicator lamp operates	● Safety belt buckle switch. ● Driver seat module.	● REFER to Section 413-01 .

	• Circuitry.	
• Excessive pressure on the occupant during normal wear, the webbing cannot be extracted, excessive slack in webbing does not retract	• Front safety belt retractor and tongue. • Rear safety belt retractor and tongue.	• Carry out the Functional Test. REFER to Component Test. INSTALL a new retractor and tongue if necessary.

Component Test

Carry out the appropriate Functional Test(s) as determined in Inspection and Verification.

Functional Test I (Buckle and Tongue)

The safety belt buckle and tongue assembly must operate freely during the latching and unlatching function. Fasten the safety belt by inserting the tongue (male portion) into the buckle (female portion).

1. Verify the following during the latching sequence:
   - Tongue insertion is not hindered by excessive effort.
   - A click is heard when the buckle latches the tongue.
2. Verify the system integrity by forcefully pulling on the belt webbing.
3. Unlatch the belt by fully depressing the buckle release button, and allowing the belt to release and retract.
4. Verify the following during the unlatching process:
   - Push-button depression does not require excessive effort.
   - Tongue can be removed easily from the buckle.
5. Repeat the above steps three times.
6. If the inspection reveals an obvious concern(s) that can be readily identified, service as required. Do not attempt to carry out any repair on the buckle and tongue assembly. If a concern exists with either component, a new safety belt buckle and safety belt and retractor assembly must be installed.

Functional Test II (Retractor)

The safety belt and retractor assembly must be freely operational for extraction and retraction of the safety belt webbing between full extension and in-vehicle stowed positions.

1. Extract and retract the safety belt between the full extension and stowed positions.
2. Verify the retractor operates without excessive effort or binding.
3. Install a new safety belt buckle retractor and tongue assembly if no obvious concerns are noticed and the complaint has been verified.

Functional Test III (System Road Test Inspection)

1. **NOTE:** If the RH or the rear safety belts are to be tested, the assistance of a passenger is required.

   Fasten the safety belts and proceed to a safe area.

2. Attain a speed of 8 km/h (5 mph).

3. **WARNING: The driver and passenger must be prepared to brace themselves if the retractor does not lock.**

   Test the safety belts.
   1. Grasp the shoulder harness and prepare to lean forward.
   2. **WARNING: The maximum brake application should be on dry concrete or equivalent hard surface, NEVER on wet pavement or gravel.**

      WARNING: The driver and passenger must be prepared to brace themselves in the event the retractor does not lock.

      Make a maximum brake application without a skid.
   3. NOTE: Do not jerk on the safety belt webbing when carrying out this test. Lean forward slightly when the brake application is made.

4. The safety belts should lock up with minimum webbing extension.

5. If there is a lockup of both shoulder straps, the safety belt assemblies are functioning correctly. Should either or both retractors fail to lock up at the 8 km/h (5 mph) speed, repeat the test at a constant 24 km/h (15 mph) speed. (This test must be carried out with the assistance of a RH front or rear passenger if the RH front or rear safety belts are to be tested).

6. **CAUTION: Before installing a new safety belt assembly, inspect the mounting area for damage and distortion. If the retractor of a new safety belt assembly has been bolted into a damaged or distorted mounting area, the retractor could be warped and may not function. If this is the case, remove the retractor and return the sheet metal to the original configuration and install another complete safety belt assembly.**

   If the retractors do not lock up at the 24 km/h (15 mph) test, return the vehicle for service of malfunctioning safety belts.

Functional Test IV (Automatic Locking Retractor)

WARNING: After any vehicle collision, the safety belt system at all outboard seating positions (except driver, which has no "automatic locking retractor" feature) must be checked by a qualified technician to verify that the "automatic locking" feature for child seats is still functioning correctly, in addition to other checks for correct safety belt system function. A new safety belt and retractor assembly must be installed if the safety belt assembly's "automatic locking retractor" feature or any other safety belt function is not operating correctly when checked according to the procedures in the workshop manual. Failure to install a new safety belt and retractor assembly could increase the risk of injury in collisions.

1. Position the seat back into the full up position.

2. Position the height adjuster in the full down or up position.

3. Latch the seat belt buckle and tongue assembly.

4. Pull the shoulder belt out until the automatic locking retractor (ALR) feature is activated.

5. Release the shoulder belt and allow it to retract until it stops.

6. Pull on the shoulder belt to check that the belt has remained in the ALR mode. If the belt is not locked, install a new safety belt and retractor assembly.

7. Unlatch the safety belt tongue from the buckle and allow the safety belt to retract to its stowed position.

8. Pull the shoulder belt to verify the retractor assembly has converted automatically out of the ALR mode. If the shoulder belt remains locked in the stowed position, install a new safety belt and retractor assembly.

Safety Belt Cleaning

1.  **WARNING: Do not bleach or re-dye the webbing, as the webbing may weaken.**

   Clean the safety belt webbing only with a mild soap solution recommended for cleaning upholstery or carpets. Follow the instructions provided with the soap.

Safety Belt Maintenance

WARNING: All safety belt assemblies include retractors, buckles, front seat belt buckle support assemblies (slide bar, if so equipped), shoulder belt height adjuster (if equipped), child safety seat tether bracket assemblies (if equipped) and attaching hardware should be inspected after any collision. Ford recommends new safety belt assemblies be installed unless a qualified technician finds the assemblies show no damage and operate correctly. Safety belt assemblies not in use during a collision should also be inspected and new assemblies installed if either damage or incorrect operation is noted.

1. The safety belt assemblies should be periodically inspected to make sure that they have not become damaged and that they remain in correct operating condition, particularly if they have been subjected to severe stress.

2. Before installing the new safety belt assembly, the safety belt retaining areas must be inspected for damage and distortion. If the retaining points are damaged and distorted, the sheet metal must be reworked back to its original shape and structural integrity.

3. Install the new safety belt(s) using the appropriate instructions. Carry-out the Functional Test Procedure. For additional information, refer to Safety Belt System in this section.

Safety Belt With Anchor Plate Thread Damage

1. **NOTE:** The following is for 7/16-20 bolts only.

   NOTE: The lap/shoulder safety belts are factory-installed in their correct locations. If the safety belts are removed for any reason, they must be installed; refer to removal and installation. The anchor bolts must be hand-started and then tightened to the correct torque specifications as noted in the Torque Specifications table in this section.

   Remove the broken or stripped bolt.

2. Drill out the internal threads in the safety belt anchor plate with a 27/64 inch drill bit.

3. Rethread the anchor plate with a 1/2-13 tap.

4. Blow out the chips.

5. **NOTE:** New parts are to be used in place of the original parts; refer to the Parts Replacement Chart—Safety Belt with Damaged Weld Nut Anchor Plate Threads in Specifications in this section.

   Install the attachment parts in the correct sequence. For additional information, refer to the procedure in this section. Install a new bolt, hand-tighten and then tighten to correct torque specifications as noted in the Torque Specifications table in this section.

Replacement of the Weld Nut and Reinforcement

1. **NOTE:** The following is for Coupe, Front and Rear, and Convertible rear only.

   NOTE: If the safety belt anchor nuts or reinforcements are stripped or missing, a new nut/reinforcement plate must be installed.

   Expose the suspect anchor point.

2. Drill out two 8 mm (0.32 in) (5/16 inch) diameter access holes adjacent to the weld nut clearance hole.

3. Thread a length of copper welding wire through the clearance hole and position to secure the weld nut and washer.

4. Use MIG wire feed welder and plug weld a 7/16 inch weld nut and standard washer in place at the two 8 mm (5/16 inch) holes.

5. Metal finish as necessary.

6. Install the restraint system.

7. Carry out the Functional Test. For additional information, refer to Safety Belt System in this section.

Safety Belt Procedure After a Collision

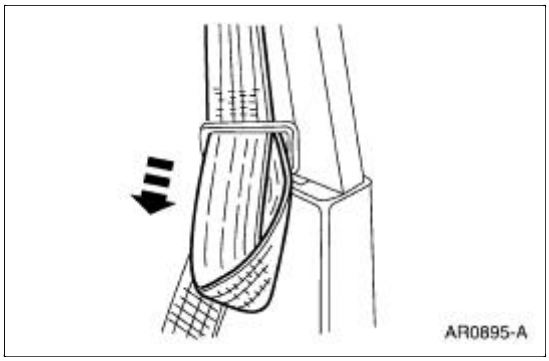
WARNING: All safety belt assemblies include retractors, buckles, front seat belt buckle support assemblies (slide bar, if so equipped), shoulder belt height adjuster (if equipped), child safety seat tether bracket assemblies (if equipped) and attaching hardware should be inspected after any collision. Ford recommends new safety belt assemblies be installed unless a qualified technician finds the assemblies show no damage and operate correctly. Safety belt assemblies not in use during a collision should also be inspected and new assemblies installed if either damage or incorrect operation is noted.

1. Before installing a new safety belt assembly, the safety belt attaching areas must be inspected for damage and distortion. If the attaching points are damaged and distorted, the sheet metal must be worked back to its original shape and structural integrity.

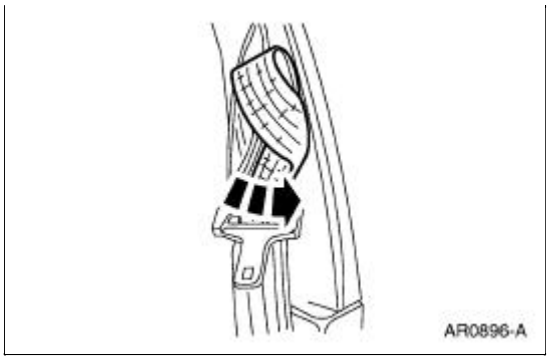
2. Install the new safety belt(s); refer to the procedure in this section. Carry-out the Functional Test. For additional information, refer to Safety Belt System in this section.

Safety Belt Tongue Rotated on Belt

1. Grasp the belt tongue and pull the belt webbing down to form a loop through the upper (longer and narrower) slot in the tongue.

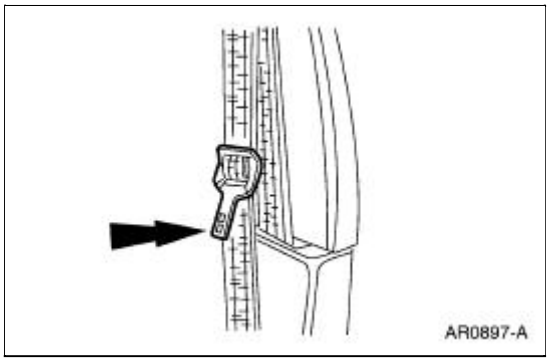


2. Rotate and fold the belt webbing over itself within the slot to remove the twist.
3. Pull the excess belt webbing back through the upper slot in the belt tongue.
4. Grasp the belt tongue and pull the belt webbing up to form a loop through the low slot in the tongue.
5. Rotate and fold the belt webbing over itself within the slot to remove the twist.



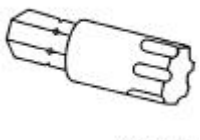
6. Pull the excess belt webbing through the slot.
7. **NOTE:** Dual slot tongue shown; single slot tongue is similar.

   The safety belt tongue should face inward when completed.


AR0897-A

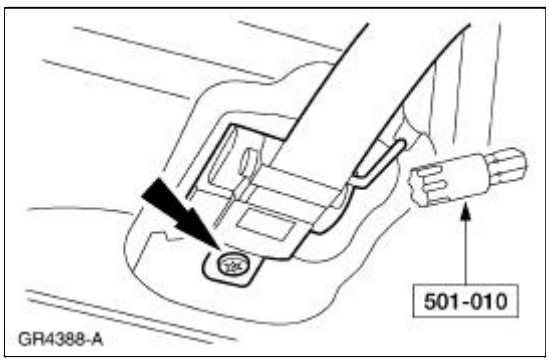
Retractor —Front Seat Safety Belt, Coupe

Special Tool(s)

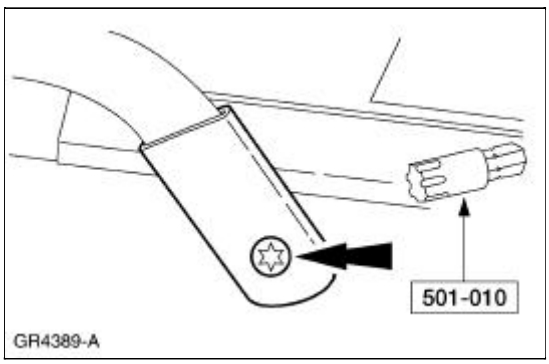
 ST1181-A	Torx Bit, Safety Belt Bolt 501-010 (T77L-2100-A)

Removal

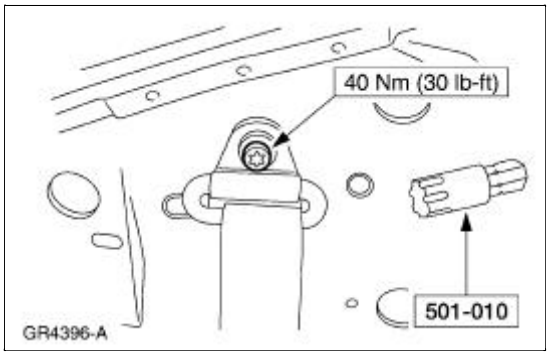
1. Remove the quarter trim panel (31012). For additional information, refer to Section 501-05 .
2. Using the special tool, remove the bolt and the safety belt retractor.
   - Remove the mastic seal.



3. Using the special tool, remove the safety belt anchor bolt.



4. Using the special tool, remove the D-ring bolt.

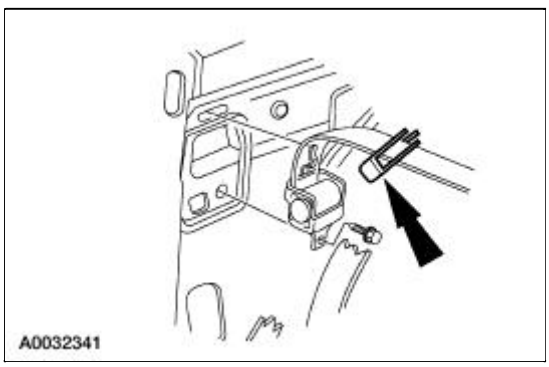


Installation

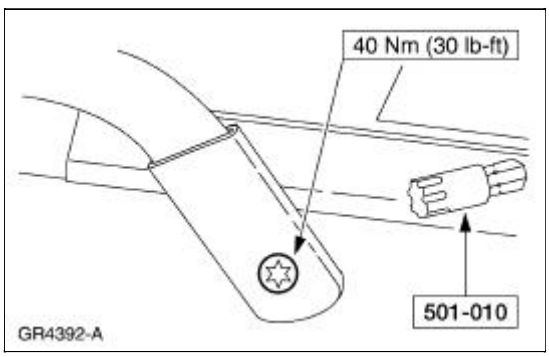
NOTE: Make sure the retractor tongue faces inboard.

NOTE: Make sure the safety belt is not twisted.

1. The shipping clip must remain attached prior to the installation of the retractor into the vehicle.The clip must be removed after the retractor is installed.

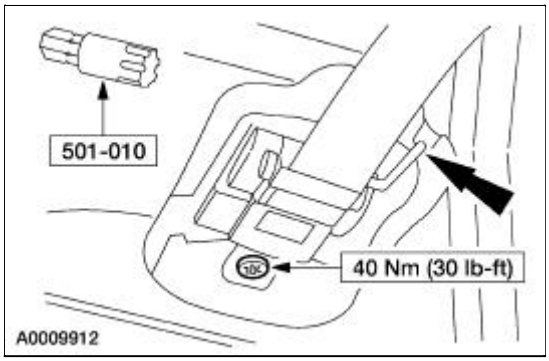


2. Position the safety belt anchor. Using the special tool, install the safety belt bolt.

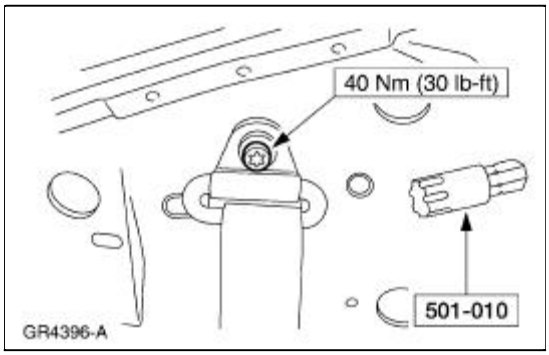


3. Install a new mastic seal around the safety belt retractor before installing the retractor in the vehicle.

4. Position the safety belt retractor. Using the special tool, install the bolt.

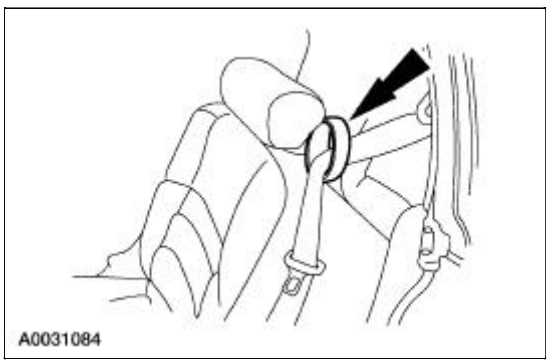


5. Using the special tool, install the D- ring bolt.



6. Install the quarter trim panel. For additional information, refer to Section 501-05 .

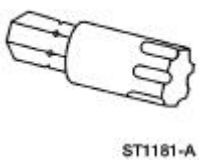
7. The shoulder belt must pass through the belt holder on the top of the seatback.



8. Check the active restraint system for correct operation.

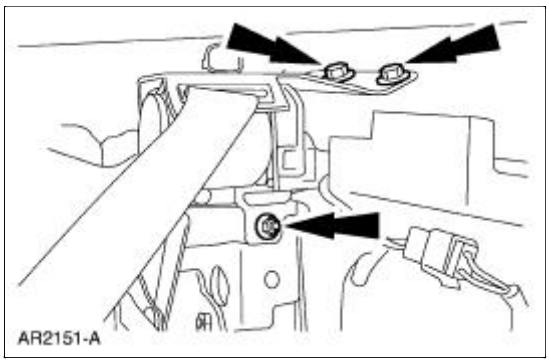
Retractor —Front Seat Safety Belt, Convertible

Special Tool(s)

 ST1181-A	Torx Bit, Safety Belt Bolt 501-010 (T77L-2100-A)

Removal

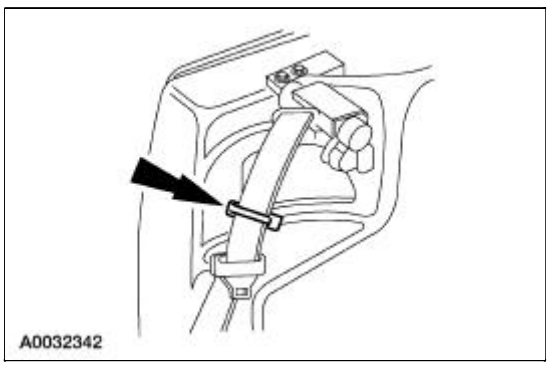
1. Remove the quarter trim panel (31012). For additional information, refer to Section 501-05 .
2. Remove the nut and bolts and safety belt retractor.



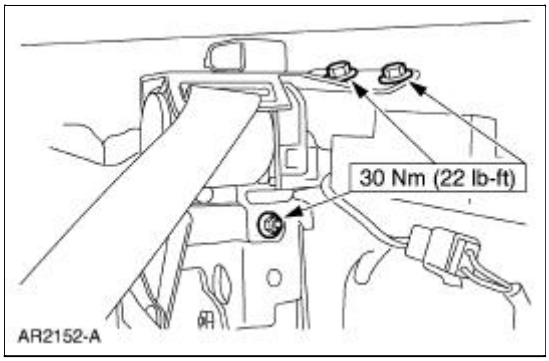
Installation

NOTE: Make sure the safety belt is not twisted.

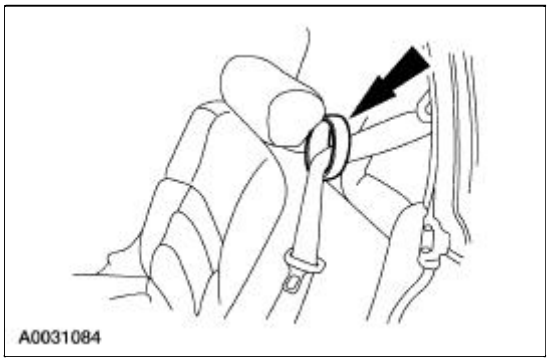
1. The shipping clip must remain attached prior to the installation of the retractor into the vehicle. The clip must be removed after the retractor is installed.



2. Position the safety belt retractor. Install the nut and bolts.



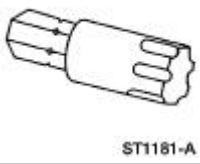
3. The shoulder belt must pass through the belt holder on the top of the seatback.



4. Install the quarter trim panel. For additional information, refer to Section 501-05 .
5. Check the active restraint system for correct operation.

Retractor —Rear Seat Safety Belt, Coupe

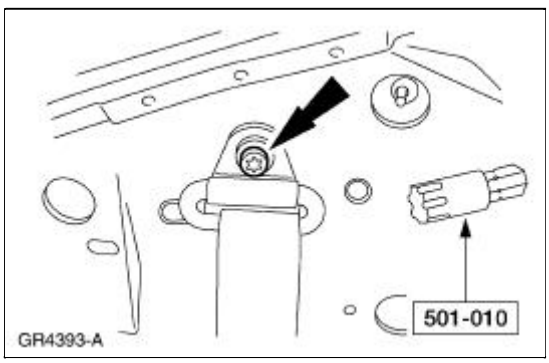
Special Tool(s)

 ST1181-A	Torx Bit, Safety Belt Bolt 501-010 (T77L-2100-A)

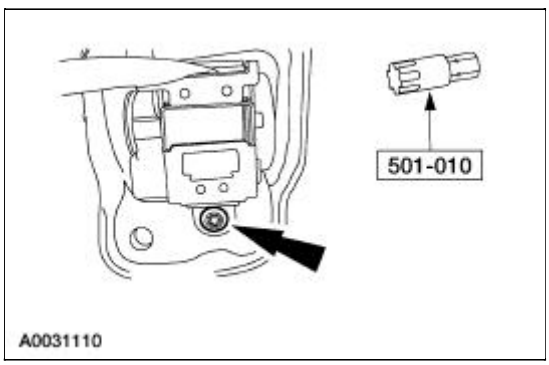
Removal

1. Remove the quarter trim panel (31012) and the angel wing trim. For additional information, refer to Section 501-05 .

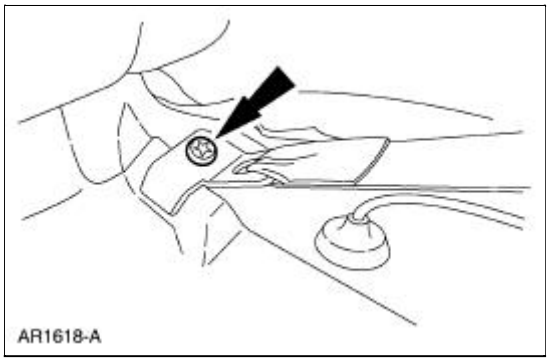
2. Using the special tool, remove the D-ring bolt.



3. Using the special tool, remove the bolt and the safety belt retractor (611B68).



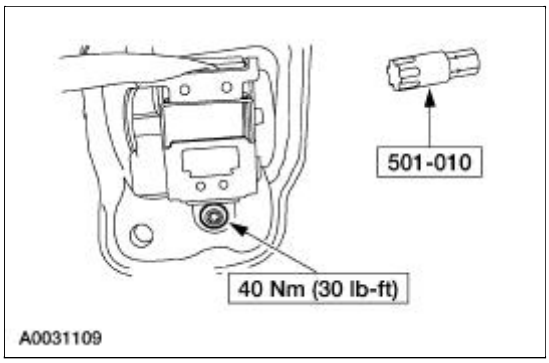
4. Remove the bolt.

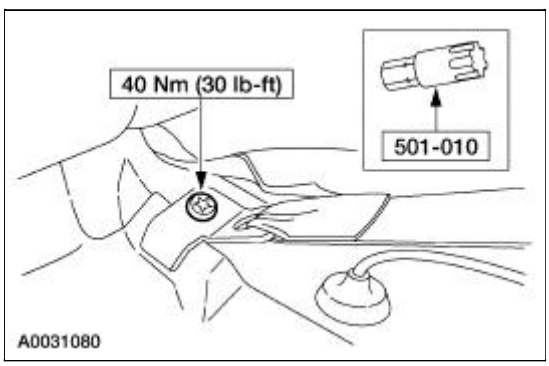


Installation

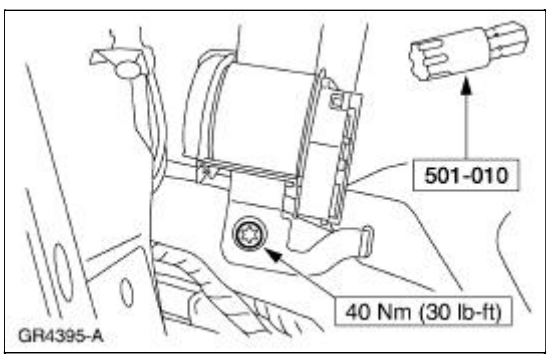
NOTE: Make sure the safety belt is not twisted when inserting it in the quarter trim panel.

1. Install the bolt.

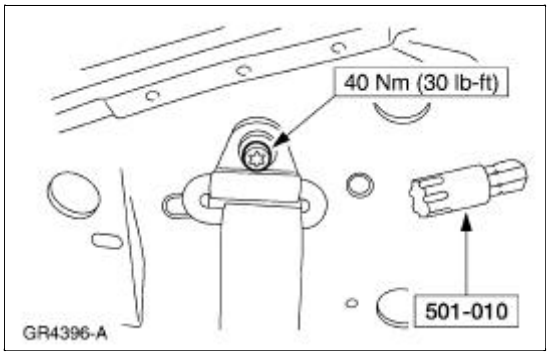




2. Using the special tool, install the safety belt retractor and the bolt.

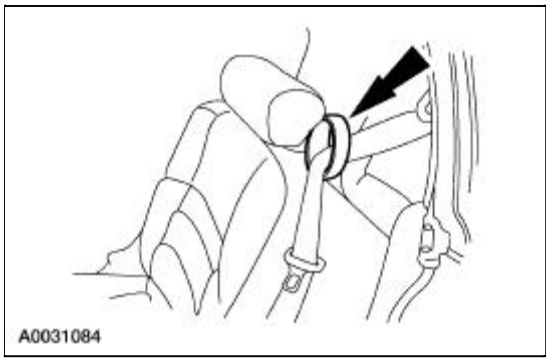


3. Using the special tool, install the D-ring bolt.



4. Install the quarter trim panel (31012) and the angel wing trim. For additional information, refer to Section 501-05 .

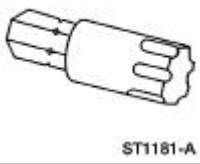
5. Make sure the shoulder belt passes through the belt holder on the top of the seatback.



6. Check the active restraint system for correct operation.

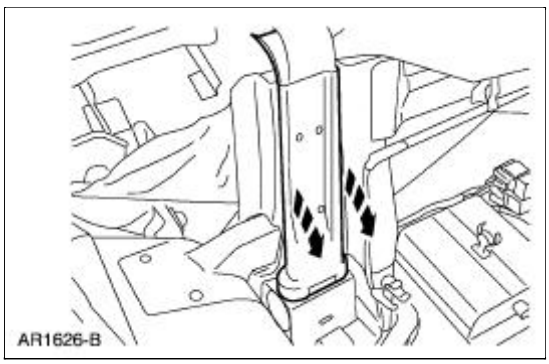
Retractor —Rear Seat Safety Belt, Convertible

Special Tool(s)

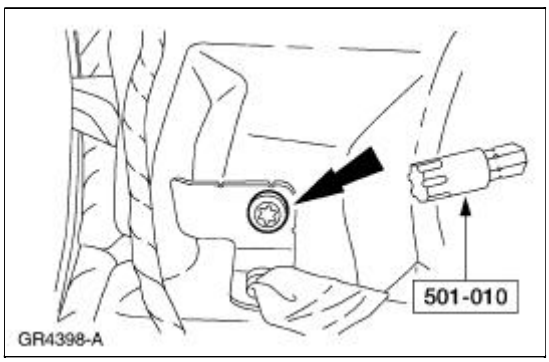
 ST1181-A	Torx Bit, Safety Belt Bolt 501-010 (T77L-2100-A)

Removal

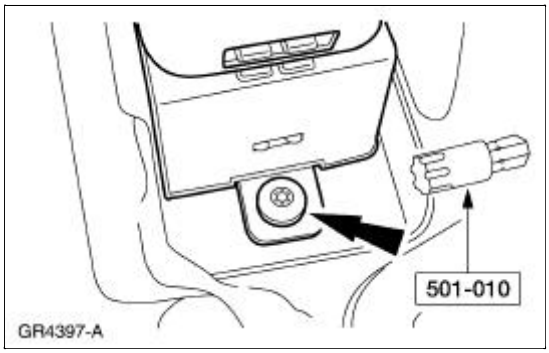
1. Remove the rear seat cushion.
2. Remove the luggage compartment front lining board (45444).
3. Release the safety belt guide.



4. Using the special tool, remove the safety belt anchor bolt.



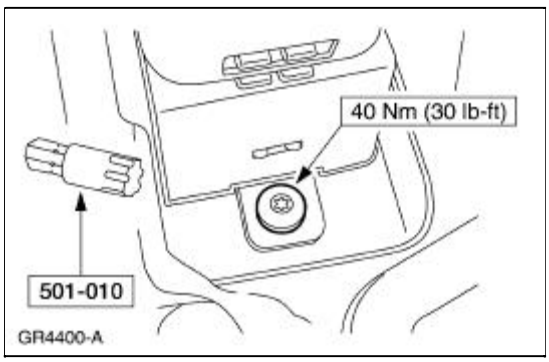
5. Using the special tool, remove the bolt and the rear safety belt retractor.



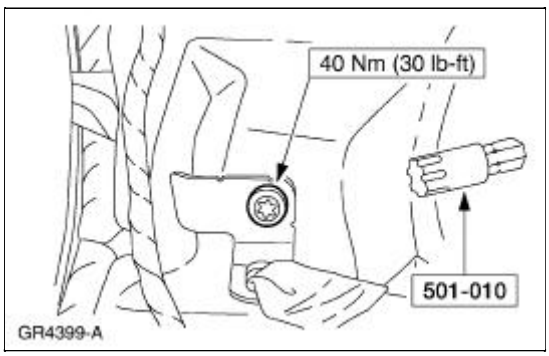
Installation

NOTE: Make sure the safety belt is not twisted when inserting it in the quarter trim panel.

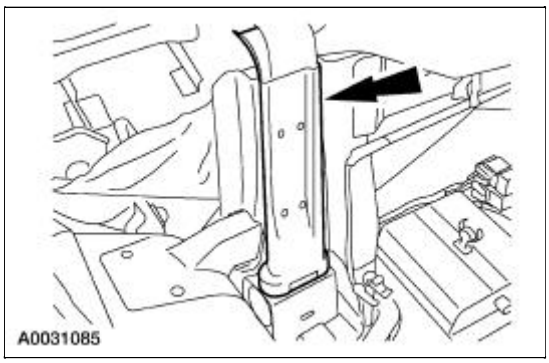
1. Using the special tool, install the bolt and the rear safety belt retractor.



2. Using the special tool, install the safety belt anchor bolt.

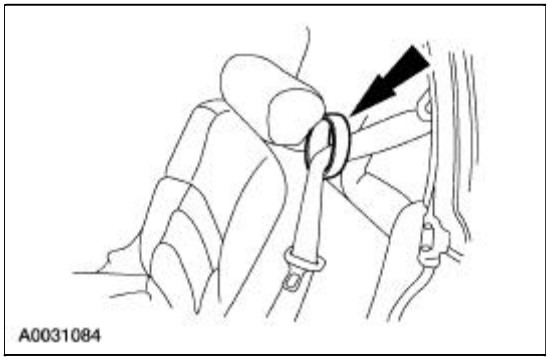


3. Install the safety belt guide.



4. Install the luggage compartment front lining board.

5. Install the rear seat cushion.
6. Make sure the shoulder belt passes through the belt holder on the top of the seatback.



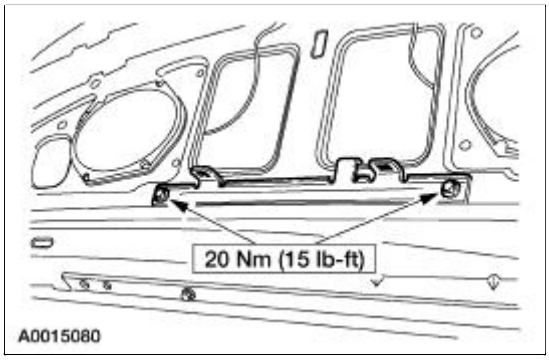
7. Check the active restraint system for correct operation.

Child Safety Seat Belt —Tether Anchor

Removal and Installation

Hard top only

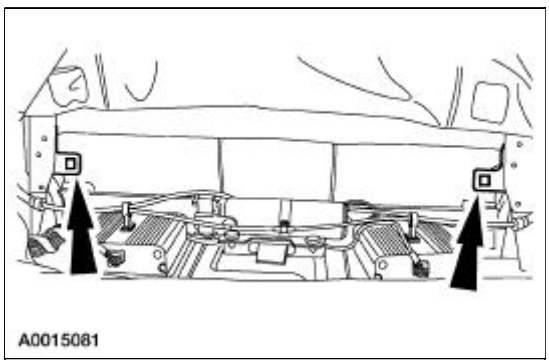
1. Remove the package tray. For additional information, refer to Section 501-05 .
2. Remove the bolts and the tether anchor bracket.



Convertible only

3. **NOTE:** Rework the sheet metal to its original condition and structural integrity.

   The convertible model tether anchors are part of the sheet metal.
   - These are accessed through the trunk by removing the trunk front trim.



Hard top only

4. **NOTE:** Rework the sheet metal to its original condition and structural integrity.

   To install, reverse the removal procedure.

Hard top and convertible

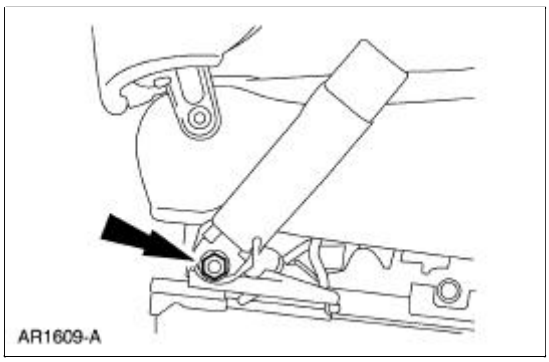
5. Check the restraint system for correct operation.

Safety Belt Buckle —Front Seat

Removal

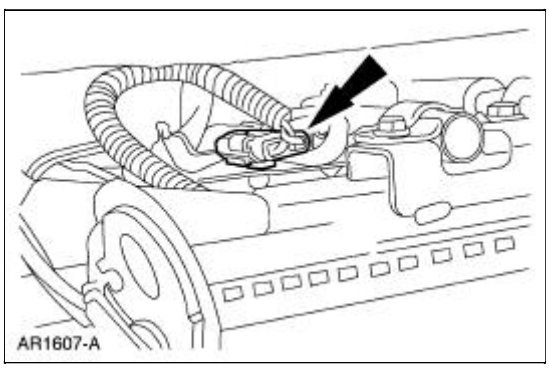
Driver and passenger seat

1. Remove the front seat. For additional information, refer to Section 501-10 .
2. Remove the nut and the safety belt buckle.



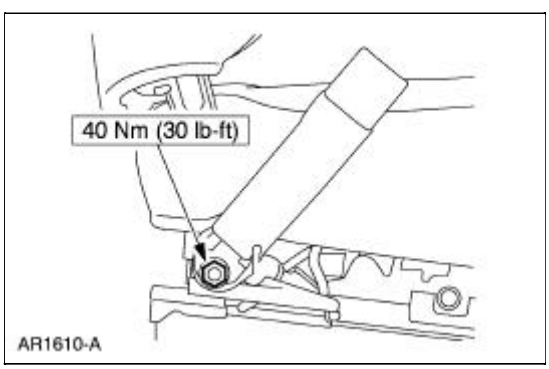
Driver seat only

3. Disconnect the safety belt buckle electrical connector.



Installation

1. To install, reverse the removal procedure.

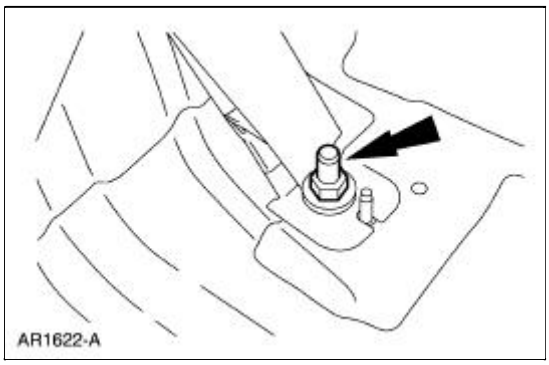


2. Check the restraint system for correct operation.

Safety Belt Buckle —Rear Seat

Removal

1. Remove the rear seat cushion.
2. Remove the bolt and the safety belt buckle.

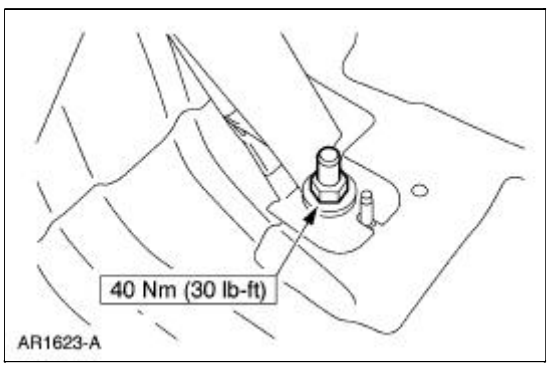


Installation

1. **NOTE:** LH and RH rear seat safety belt buckles have different anchor plates. Make sure correct part is used when installing buckle and anchor plate in the anchor locator feature.

   NOTE: LH rear seat safety belt buckle anchor plate shown.

   To install, reverse the removal procedure.



2. Make sure the safety belt buckles are routed correctly and are placed through the seat cushion.
3. Check the restraint system for correct operation.

Child Safety Seat Tether Anchor —LATCH

Removal and Installation

1. Remove the lower anchors and tethers for children (LATCH) attachment fasteners.
2. Remove the LATCH attachment.
3. To install, reverse the removal procedure.

Torque Specifications

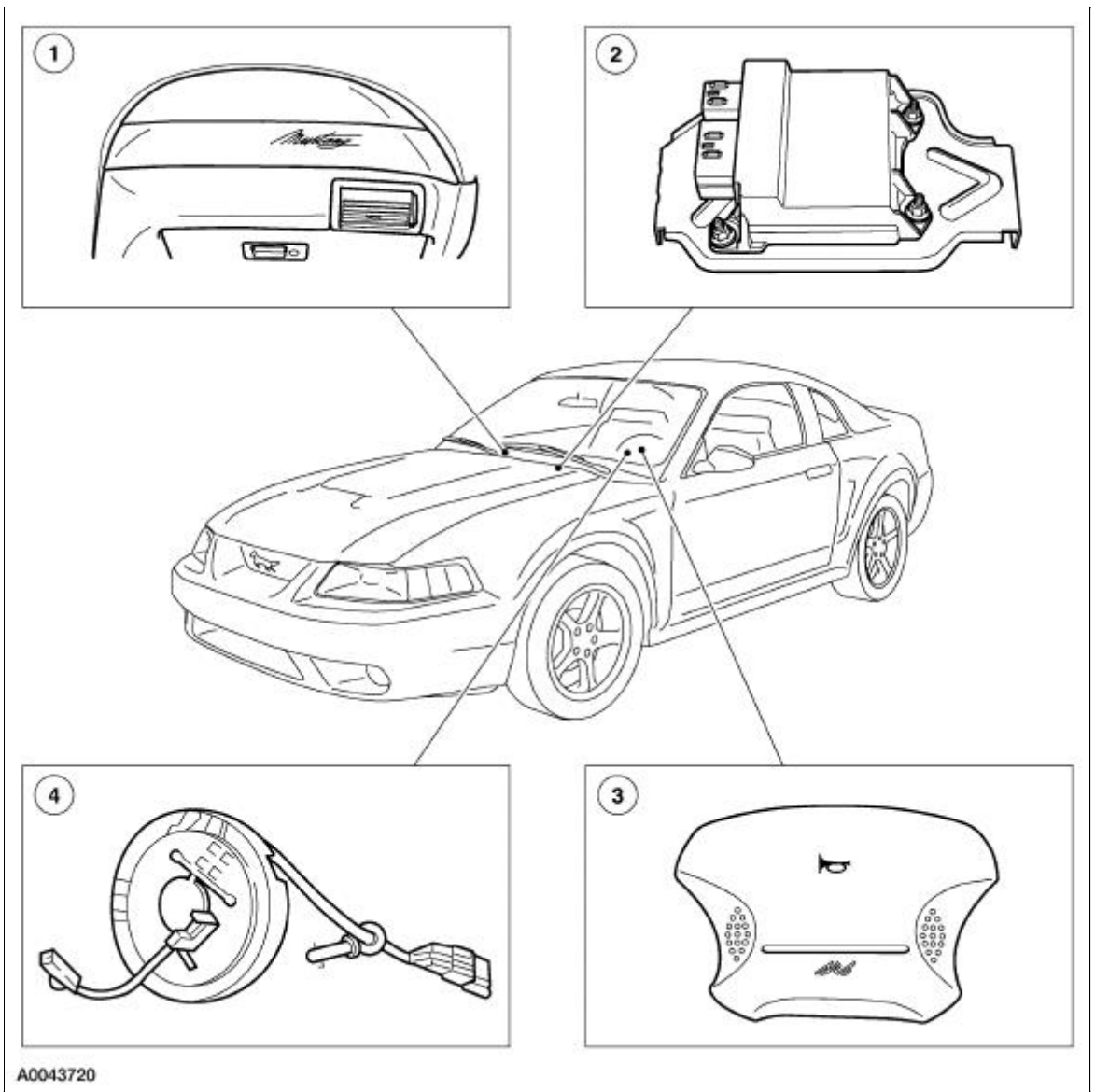
Description	Nm	lb-ft	lb-in
Restraints control module bracket bolts	12	9	—
Driver air bag bolts	9	—	80
Passenger air bag bolts	9	—	80
Crash sensor grounding screw (N802455-S190) Weld nut repair screw (8 mm)	15	11	—
Grounding screw (6 mm) (N806327-S190)	12	9	—

Air Bag Supplemental Restraint System (SRS)

The air bag supplemental restraint system (SRS) is designed to provide increased collision protection for front seat occupants in addition to that provided by the three-point safety belt system. Safety belt use is necessary to obtain the best occupant protection and to receive the full advantages of the SRS.

The air bag supplemental restraint system (SRS) components are shown in the following illustration.

Air Bag Supplemental Restraint System (SRS) Components



Item	Part Number	Description
1	044A74	Passenger air bag module
2	14B321	Restraints control module (RCM)
3	043B13	Driver air bag module
4	14A664	Clockspring

Driver Air Bag Module

The driver air bag module:

- is installed as an assembly.
- is mounted in the center of the steering wheel.

Clockspring

The clockspring:

- is mounted on the steering column, behind the steering wheel.
- provides a continuous electrical path from the restraints control module (RCM) to the driver air bag.

Passenger Air Bag Module

The passenger air bag module:

- is installed as an assembly.
- is mounted in the RH side of the instrument panel.

Restraints Control Module (RCM)

The restraints control module (RCM) performs the following functions:

- signals the inflators to deploy the air bags in the event of a deployable crash.
- monitors the air bag supplemental restraint system (SRS) for faults.
- illuminates the air bag indicator if a fault is detected.
- flashes the air bag indicator to indicate the lamp fault code (LFC) detected.
- communicates through the data link connector (DLC) the current or historical diagnostic trouble codes (DTCs).
- signals the generic electronic module (GEM) to activate a chime if the air bag indicator is not available and another SRS fault exists.

NOTE: The safing sensor is internal to the RCM and is not repaired separately.

The RCM monitors the SRS for possible faults. If a fault is detected while the ignition switch is in the RUN position, the RCM will illuminate the air bag indicator located in the instrument cluster.

When the ignition is cycled (turned off and then on), the air bag indicator will begin its prove out sequence. During prove out the air bag indicator will illuminate for six seconds, go off for two seconds and then, if a system fault exists, flash the two-digit LFC. The air bag indicator will flash the LFC five times, then it will remain illuminated for the rest of the key cycle. The RCM will also communicate the

current and historical DTCs through the DLC, using a scan tool. If the air bag indicator does not function, and the system detects a fault condition, the RCM will signal the GEM to activate an audible chime. The chime is a series of five sets of five tone bursts. If the chime is heard, the SRS and the air bag indicator require repair.

LFCs are prioritized. If two or more faults occur at the same time, the fault having the highest priority will be displayed. After that fault has been corrected, the next highest priority fault will be displayed.

The RCM includes a backup power supply. This feature provides sufficient backup power to deploy the air bags in the event that the ignition circuit is damaged in a collision before the safing and air bag sensors determine that deployment is required. The backup power supply will deplete its stored energy approximately one minute after the battery ground cable is disconnected.

Electrical System

The electrical system that supports the air bag supplemental restraint system (SRS):

- is powered from the battery through the ignition circuit.
- provides the electrical path from the restraints control module (RCM) to the air bag modules.
- provides the electrical path from the RCM to the air bag indicator.
- provides the electrical path from the RCM to the data link connector (DLC).
- provides the electrical path from the RCM to the generic electronic module (GEM).

Sensor

 **WARNING: The restraints control module (RCM) orientation is critical for proper system operation. If a vehicle equipped with an air bag supplemental restraint system (SRS) has been involved in a collision in which the center tunnel area has been damaged, inspect the mounting and bracket for deformation. If damaged, the RCM must be replaced whether or not the air bags have deployed. In addition, make sure the area of the RCM mounting is restored to its original condition.**

The SRS contains two sensors which are integral to the RCM. The RCM is mounted on the center tunnel under the instrument panel.

Air Bag Supplemental Restraint System (SRS)

Refer to Wiring Diagrams Cell 46 , Air Bag for schematic and connector information.

Special Tool(s)

 ST2506-A	Diagnostic Tool, Restraint System 418-F088 (105-R0012)

Restraint System Diagnostic Tool Warning

WARNING: This tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

Diagnosing Customer Concerns Without Hard DTCs

If a lamp fault code (LFC) is reported by the customer but is not present when the vehicle comes in for service, follow the Diagnostic Instructions procedure in this section to identify the intermittent DTC.

Once the DTC is known, read the Normal Operation section of the pinpoint test for the DTC involved.

- Follow the deactivation procedure in this section.
- Determine the location of components involved in creating that code.
- Perform a thorough visual inspection of:
  - components.
  - connectors.
  - splices and wiring harnesses.
  - pinched wires.
  - worn insulation on conductors.

Refer to the Possible Causes section of the pinpoint test for the DTC involved, which lists the common concerns that relate to the DTC. Concerns are listed according to priority.

Diagnosing Customer Concerns with Hard DTCs

WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

Most air bag supplemental restraint system (SRS) diagnostic procedures will require the use of the deactivation and reactivation procedures in this section.

The deactivation and reactivation require the installation and removal of restraint system diagnostic tools. These procedures require removal of driver air bag module, and the disconnection of the passenger air bag module. This reduces the risk of deployment of air bag modules and safety belt pretensioners while diagnostics are being carried out.

Restraint system diagnostic tools are required to carry out diagnosis and testing of the supplemental restraint system (SRS). It is not acceptable to short-circuit the air bag module connections with a jumper wire. If a jumper wire is used to short-circuit the air bag module connections, a lamp fault code (LFC) will be displayed.

WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

The reactivation procedure requires the removal of any restraint system diagnostic tools installed and the reconnection of any air bag modules disconnected.

Deactivation Procedure

WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section.

The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury.

NOTE: Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road.**

NOTE: After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road.**

NOTE: After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road.**

NOTE: The SRS must be fully operational and free of faults before releasing the vehicle to the customer.

1. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

   Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

   The side air bag sensors are located at or near the base of the B-pillar.

To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

Disconnect the battery ground cable. For additional information, refer to Section 414-01 .

2. Wait at least one minute for the backup power supply in the restraints control module (RCM) to deplete its stored energy.

3. **WARNING: Carry a live air bag module with the air bag and trim cover pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.**

   WARNING: Do not set an air bag module down with the trim cover face down. This will reduce the risk of injury in the event of an accidental deployment.

   Remove the driver air bag module from the vehicle. Refer to Driver Air Bag Module in this section.

4. **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

   Connect a restraint system diagnostic tool to the vehicle harness at the top of the steering column.

5. Disconnect the passenger air bag module electrical connector.

6. **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

   Connect a restraint system diagnostic tool to the vehicle harness.

7. Reconnect the battery ground cable. For additional information, refer to Section 414-01 .

Reactivation Procedure

1. **WARNING: The restraint system diagnostic tool must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury.**

   WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

   Disconnect the battery ground cable. Refer to Section 414-01 .

2. Wait at least one minute for the backup power supply in the restraints control module (RCM) to deplete its stored energy.

3. Remove the restraint system diagnostic tool from the vehicle harness connector at the top of the

steering column.

4. **WARNING: Carry a live air bag module with the air bag and trim cover pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.**

   Install the driver air bag module. Refer to Driver Air Bag Module in this section.

5. **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

   Remove the restraint system diagnostic tool from the vehicle harness connector at the passenger air bag module.

6. Connect the passenger air bag module electrical connector.

7. Reconnect the battery ground cable. For additional information, refer to Section 414-01 .

8. Prove out the system.

Prove Out Procedure

Turn the ignition switch from the OFF to the RUN position and visually monitor the air bag indicator with the air bag modules or restraint system diagnostic tools installed. The air bag indicator will light continuously for approximately six seconds and then turn off. If an air bag supplemental restraint system (SRS) fault is present, the air bag indicator will either:

- fail to light.
- remain lit continuously.
- flash.

The flashing might not occur until approximately 30 seconds after the ignition switch has been turned from the OFF to the RUN position. This is the time required for the restraints control module (RCM) to complete the testing of the SRS. If the air bag indicator is inoperative and an SRS fault exists, a chime will sound in a pattern of five sets of five beeps. If this occurs, the air bag indicator will need to be repaired before diagnosis can continue.

Glossary

Restraint System Diagnostic Tool

Restraint system diagnostic tools are used to simulate air bag module connections to the system.

Disconnect the Component

Disconnect the component means disconnect the component vehicle harness connector. It does not mean remove the component. Do not reconnect a disconnected component unless instructed to do so.

Deactivate the System

Deactivate the system means to perform the deactivation procedure. Refer to Deactivation Procedure in this section.

Prove Out the System

Prove out the system means to turn the ignition switch from the OFF to the RUN position and visually monitor the air bag indicator with the air bag modules installed. Refer to Prove Out Procedure in this section.

Reactivate the System

Reactivate the system means to perform the reactivation procedure. Refer to Reactivation Procedure in this section.

Reconnect the System

Reconnect the system means to reconnect all system components. Refer to Air Bag System Reconnect Checklist in this section.

Install a New Component

Install a new component means to remove the existing component and install a new authorized part obtained from Ford Customer Service Division.

Verify the System

Verify the system means to prove out the system with restraint system diagnostic tools for the air bag modules in place of components.

Air Bag System Reconnect Checklist

The checklist below should be completed following diagnosis or repair of any air bag system concern.

1. Is the connector at the base of the steering column connected?
2. Are the air bag modules connected?
3. Is the restraints control module (RCM) connected?
4. Is the vehicle battery connected?

Diagnostic Instructions — Air Bag Supplemental Restraint System (SRS)

Special Tool(s)

 ST2332-A	Worldwide Diagnostic System (WDS) 418-F224, New Generation STAR (NGS) Tester 418-F052, or equivalent scan tool

The symptom chart can be used to help locate the air bag supplemental restraint system (SRS) concerns if no diagnostic trouble codes (DTCs) are retrieved and the listed symptoms are observed. Whether or not the listed symptoms are observed, always perform the following.

1. Retrieve all DTCs stored in the restraints control module (RCM) memory. Refer to Retrieve/Clear Continuous DTCs in this section.

2. Run the On-Demand Self Test to determine what DTCs are currently being sensed by the restraints control module (RCM) (14B321). Refer to On-Demand Self Test in this section.

3. If the stored DTCs are different than the current DTCs, always repair the current DTCs first.

4. If memory displays different continuous DTCs than the On-Demand Self-Test, perform in the following order:

- On-Demand Self-Test.
- Memory (Retrieve/Clear Continuous DTCs).

A DTC can indicate several concerns. The DTCs are to assist in system diagnosis and are not to be considered definitive. Always refer to the pinpoint test corresponding to the DTC to determine where the concern lies and to repair the concern correctly.

The SRS diagnostics can be divided into three sections.

- Diagnostic test modes
- PID/data monitor and record
- Active command modes

Diagnostic Test Modes

Two menu options are available under the diagnostic test modes.

- Retrieve/Clear Continuous DTCs.
- On-Demand Self Test.

Retrieve/Clear Continuous DTCs

During vehicle operation, the restraints control module (RCM) will detect and store both intermittent and hard fault DTCs in nonvolatile memory. The DTC strategy employed by the RCM incorporates a time-out scheme for determining when a concern exists in the system. This requires a concern to exist for up to one minute in the system before the RCM will detect it. For the RCM to determine that a concern no longer exists, the concern must be absent for up to one minute. The actual detection time-outs vary with each DTC. The DTCs can be retrieved with a scan tool. Any DTCs stored in the RCM will be displayed on the scan tool along with a brief description of the DTC. If no DTCs are present, the scan tool will display a SYSTEM PASSED message. This option can also be used to clear DTCs from the RCM memory, as long as the concern no longer exists. Once 128 key cycles have been recorded since the concern was last detected, the DTC will automatically be removed from memory.

To retrieve or clear DTCs, follow these steps.

1. Connect the scan tool to the data link connector (DLC).
2. Turn the ignition switch to the RUN position.
3. Follow manufacturer's instructions for the scan tool being used.
4. All continuous DTCs will be displayed. Before proceeding with the clearing operation, make note of the DTCs displayed because, once cleared, they cannot be retrieved.
5. The scan tool will retrieve DTCs again after clearing DTCs and, if any remain, they will be displayed. Hard DTCs will be redisplayed after clearing DTCs since they cannot be cleared from the RCM.

On-Demand Self Test

The On-Demand Self Test option is used to verify that no electrical concerns exist with the air bag supplemental restraint system (SRS). Upon entering the self test, the restraints control module (RCM) will make an electrical check of each electrical component in the system. If a concern is detected, a DTC is displayed on the scan tool with a brief description of the DTC. Concerns detected during the self test are not stored in memory, unless the same concern was also detected during normal vehicle operation. The self test should always be run after any repair to verify that the repair was successful.

To run the On-Demand Self Test, follow these steps:

6. Connect a scan tool to the data link connector (DLC).
7. Turn the ignition switch to the RUN position.
8. Follow manufacturer's instructions for the scan tool being used.
9. The RCM will run the On-Demand Self Test and display on-demand DTCs (reflecting hard system concerns) on the screen.

PID/Data Monitor and Record

The PID/Data Monitor and Record option allows the scan tool operator to read the state of several parameter IDs (PIDs) to aid in diagnosing the system. PIDs are real time measurements of parameters such as voltages, resistances, etc., calculated by the restraints control module (RCM) and sent to the scan tool for display. Many of the PIDs supported by the RCM are calculated periodically and are, therefore, not true real time readings.

To retrieve PIDs, follow these steps:

1. Connect the scan tool to data link connector (DLC).

2. Turn the ignition switch to the RUN position.

3. Follow manufacturer's instructions for the scan tool being used.

4. PIDs are continuously updated on the display.

Active Commands

This command allows the technician to verify operation of the air bag indicator and chime. When the air bag output command is executed, the indicator and the chime are activated simultaneously for approximately four seconds. Both devices are deactivated automatically.

Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table

DTC [a]	LFC [b]	LFC Priority	Description	Action To Take
—	—	1	The Air Bag Indicator is Illuminated Continuously — RCM Disconnected, Inoperative, or Lost/Low Ignition Feed	Go To Pinpoint Test A.
B1342	24	2	RCM Is Faulted	INSTALL a new RCM.
B1231	19	3	RCM Crash Data Memory Full	INSTALL a new RCM.
B1921	21	4	RCM Bracket Ground Resistance High	Go To Pinpoint Test B.
C1414	29	5	Incorrect Vehicle Identification Code	Go To Pinpoint Test C.
B1887	15	6	Driver Air Bag Circuit Shorted to Ground	Go To Pinpoint Test D.
B1916	15	7	Driver Air Bag Circuit Shorted to Battery or Ignition	Go To Pinpoint Test E.
B1888	16	8	Passenger Air Bag Circuit Shorted to Ground	Go To Pinpoint Test F.
B1925	16	9	Passenger Air Bag Circuit Shorted to Battery or Ignition	Go To Pinpoint Test G.
B1932	32	10	Driver Air Bag Circuit Resistance High	Go To Pinpoint Test H.
B1933	33	11	Passenger Air Bag Circuit Resistance High	Go To Pinpoint Test I.
B1934	34	12	Driver Air Bag Circuit Resistance Low	Go To Pinpoint Test J.
B1935	35	13	Passenger Air Bag Circuit Resistance Low	Go To Pinpoint Test K.
B1892	—	17	Air Bag Tone Warning Indicator Circuit Shorted to Ground or Open	Go To Pinpoint Test L.
B1891	—	18	Air Bag Tone Warning Indicator Circuit Shorted to Battery or Ignition	Go To Pinpoint Test M.
B1869	Tone [c]	19	Air Bag Indicator Inoperative	Go To Pinpoint Test N.
B1870	Tone [c]	20	Air Bag Indicator Shorted to Battery	Go To Pinpoint Test O.

—	—	—	No Communication with the Restraints Control Module	Go To Pinpoint Test P .

[a] DTC: Diagnostic Trouble Code, retrieved using a scan tool.
[b] LFC: Lamp fault code, flashed on air bag indicator.
[c] Tone will sound only if additional DTCs are present.

Inspection and Verification

1. Verify the customer concern by checking the air bag indicator in the instrument cluster. Refer to Prove Out the System in this section.

2. Visually inspect for obvious signs of mechanical and electrical damage using the following chart:

Visual Inspection Chart

Mechanical	Electrical
● Damaged restraints control module (RCM) bracket	● Open fuse(s) ● Damaged wiring harness ● Loose or corroded connectors ● Circuitry open/shorted

3. If the concern is not visually evident, use the scan tool to retrieve diagnostic trouble codes (DTCs) and perform the on-demand self test.

4. **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

   If the on-demand self test is passed and no DTCs are retrieved, GO to Symptom Chart .

5. If DTCs are retrieved, proceed to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table.

Symptom Chart

Symptom Chart

Condition	Possible Sources	Action
● Air bag warning indicator is illuminated continuously	● Circuitry. ● Worn or damaged connector component. ● RCM. ● Instrument cluster.	● Go To Pinpoint Test A .
● Air bag indicator flashing	● Air bag SRS system fault.	● REFER to DTC Priority Table.
● Audible tone — DTCs retrieved	● Air bag SRS system fault.	● Go To Pinpoint Test N . ● Go To Pinpoint Test O .
● No communication with the	● Scan Tool.	● Go To Pinpoint

restraints control module	• Data Link Connector (DLC). • RCM. • Circuitry.	Test P .

Pinpoint Tests — Air Bag Supplemental Restraint System (SRS)

Special Tool(s)

 ST1137-A	73III Automotive Meter 105-R0057 or equivalent
 ST2506-A	Diagnostic Tool, Restraint System 418-F088 (105-R0012)
 ST2332-A	Worldwide Diagnostic System (WDS) 418-F224, New Generation STAR (NGS) Tester 418-F052, or equivalent scan tool

Restraint System Diagnostic Tool Warning

WARNING: This tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

Pinpoint Test Note

Do not carry out any pinpoint test unless directed by the Symptom Chart.

Pinpoint Test A: The Air Bag Warning Indicator Is Illuminated Continuously — RCM Disconnected, Inoperative or Lost/Low Ignition Feed

Normal Operation

NOTE: During normal operation the air bag indicator will be lit continuously for 6 seconds after the ignition switch is placed in the RUN position and after five cycles of a lamp fault code (LFC) if a fault exists. Be sure to cycle the ignition switch and look for a 6 second indicator prove-out without LFCs.

The restraints control module (RCM) will communicate diagnostic trouble codes (DTCs) to the scan tool through the data link connector (DLC). If the scan tool displays NO COMMUNICATION when retrieving continuous DTCs, Go To Pinpoint Test P to troubleshoot the system.

Possible Causes

An air bag indicator that is illuminated continuously can be caused by one of the following:

- worn or damaged shorting bar or camming beam.
- the ignition circuit damaged.
- the RCM disconnected from the vehicle harness.
- a loss of RCM ground circuits.
- the RCM inoperative.
- circuitry.

PINPOINT TEST A: THE AIR BAG WARNING INDICATOR IS ILLUMINATED CONTINUOUSLY — RCM DISCONNECTED, INOPERATIVE, OR LOST/LOW IGNITION FEED

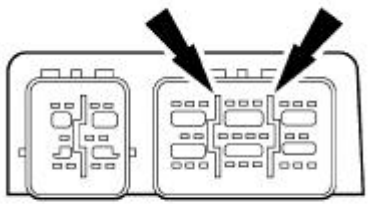
Test Step	Result / Action to Take
A1 CHECK FOR CONTINUOUS OR ON-DEMAND SELF TEST DTCs	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Were any continuous or on-demand self test DTCs retrieved?**	**Yes** If continuous DTCs were retrieved, GO to A3 . If on-demand DTCs were retrieved, GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** GO to A2 .
A2 CHECK THE RCM CONNECTION	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or	**Yes** GO to A3 . **No** CONNECT C2041 and engage the locking tabs. GO to A7 .

repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer.

- Key in OFF position.
- Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in this section.
- Key in OFF position.
- Connect: RCM C2041.
- Make sure RCM C2041 is fully connected and the red locking tab is engaged.
- **Is RCM C2041 fully connected and are the red locking tabs engaged?**

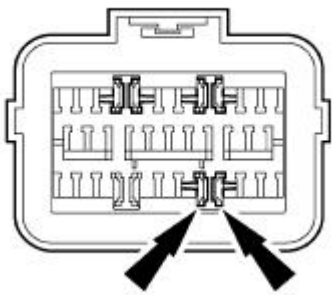
A3 CHECK THE RCM CONNECTOR

- Key in OFF position.
- Disconnect: RCM C2041.
- Inspect C2041 component side for a worn, or damaged camming beam. Inspect for foreign material.



DR1540-A

- **NOTE:** The shorting bars can be accessed by prying out the blue cover from the harness side of the connector.
- Inspect C2041 harness side for worn, damaged, or dislodged shorting bar at pins 20 and 21. Inspect for foreign material.



DR1541-A

- **Were any connector concerns found?**

Yes
CORRECT connector concerns. GO to A7 .

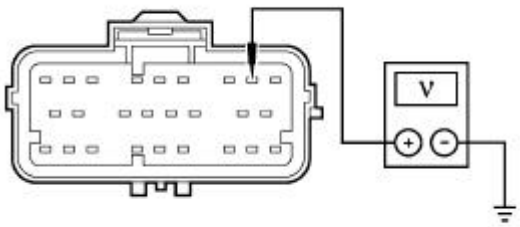
No
GO to A4 .

A4 CHECK THE IGNITION CIRCUIT 611 (WH/OG) FOR AN OPEN

- Key in ON position.
- Measure the voltage between RCM C2041 pin 2, circuit 611 (WH/OG), harness side and ground.

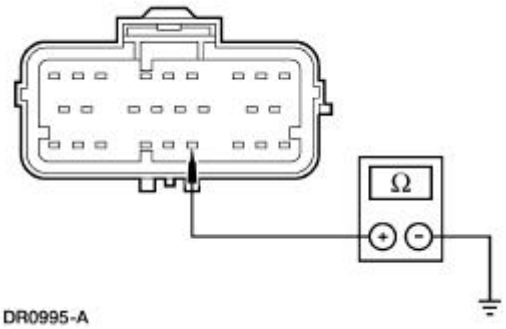
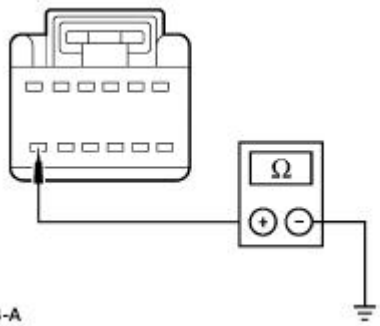
Yes
GO to A5 .

No
REPAIR the circuit. GO to A7 .



DR0994-A

- **Is the voltage between 9 and 16 volts?**

A5 CHECK THE GROUND CIRCUIT 397 (BK/WH) FOR AN OPEN	
• Key in OFF position. • Measure the resistance between RCM C2041 pin 21, circuit 397 (BK/WH), harness side and a sheet metal ground near the RCM.  DR0995-A • **Is the resistance less than 10 ohms?**	**Yes** GO to A6 . **No** REPAIR the circuit. GO to A7 .
A6 CHECK CIRCUIT 608 (BK/YE) FOR A SHORT TO GROUND	
• Connect: RCM C2041. • Disconnect: Instrument Cluster C220a. • Measure the resistance to ground at instrument cluster C220a pin 12, circuit 608 (BK/YE), harness side.  DR1614-A • **Is the resistance less than 10,000 ohms?**	**Yes** REPAIR the circuit. GO to A7 . **No** INSTALL a new RCM. GO to A7 .
A7 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step A1. • **Were any continuous DTCs retrieved during Step A1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this

	section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test B: LFC 21/DTC B1921 — RCM Bracket Ground Resistance High

Normal Operation

WARNING: The tightening torque of the restraints control module (RCM) retaining bolts is critical for proper air bag supplemental restraint system (SRS) operation. Refer to Restraints Control Module (RCM) in this section for correct torque values.

The restraints control module (RCM) monitors the resistance between the ground connections at its housing and the reference ground at pin 21. If the RCM detects a resistance greater than 100 ohms, it will store a diagnostic trouble code (DTC) B1921 in memory and flash a lamp fault code (LFC) 21 (or higher priority code if one exists) on the air bag indicator.

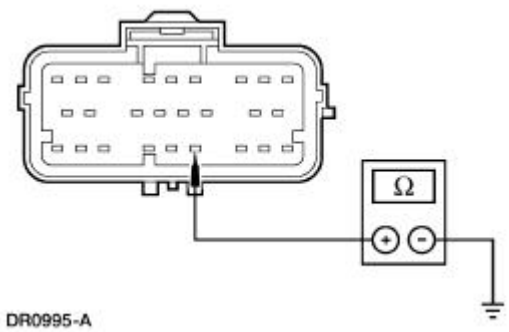
Possible Causes

High resistance between the RCM housing ground and pin ground can be caused by:

- incorrect seating of the RCM retaining bolts.
- incorrect tightening torque of the RCM retaining bolts.
- high resistance on RCM logic ground circuit 397 (BK/WH).

PINPOINT TEST B: LFC 21/DTC B1921 — RCM BRACKET GROUND RESISTANCE HIGH

Test Step	Result / Action to Take
B1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1921 retrieved during the on-demand self**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to B2. **No**

test?	This is an intermittent fault. The fault condition is not present at this time. GO to B6 .
B2 INSPECT THE RCM MOUNTING, MOUNTING BRACKET AND MOUNTING SURFACE	
• Remove the RCM. Refer to Restraints Control Module (RCM) in the Removal and Installation portion of this section. • Visually inspect the RCM, mounting bracket and mounting surface for damage, corrosion or dirt. • Inspect the RCM mounting and make sure that the retaining bolts are fully seated and tightened correctly. Refer to Restraints Control Module (RCM) in the Removal and Installation portion of this section for correct tightening torque. • **Was a significant amount of corrosion or dirt found, the RCM mounting bracket attached to the mounting surface incorrectly or were the three RCM retaining bolts not fully seated and tightened correctly?**	**Yes** Make sure the RCM, mounting bracket and mounting surface are free of damage, corrosion or dirt and the three retaining bolts are fully seated and correctly tightened. Reattach the RCM and mounting bracket to the mounting surface. GO to B7 . **No** GO to B3 .
B3 CHECK THE RCM HARNESS CONNECTION	
• Check the RCM harness connection. • **Is the RCM harness connector connected to the RCM correctly?**	**Yes** GO to B4 . **No** ATTACH the RCM harness connector correctly. GO to B7 .
B4 CHECK THE VEHICLE CHASSIS GROUND	
• Measure the resistance between a known good chassis ground and the mounting surface of the RCM. • **Is the resistance greater than 100 ohms?**	**Yes** REPAIR the chassis grounding system. GO to B7 . **No** GO to B5 .
B5 CHECK THE GROUND CIRCUIT 397 (BK/WH) FOR AN OPEN	
• Key in OFF position. • Disconnect: RCM C2041. • Measure the resistance between RCM C2041 pin 21, circuit 397 (BK/WH), harness side and a sheet metal ground near the RCM.  • **Is the resistance greater than 100 ohms?**	**Yes** REPAIR the circuit. GO to B7 . **No** INSTALL a new RCM. GO to B7 .
B6 CHECK FOR AN INTERMITTENT FAULT	
• Refer to the continuous DTCs recorded during Step B1.	**Yes**

• **Was the continuous DTC retrieved during Step B1 an intermittent fault?**	CHECK for causes or intermittent high resistance on circuit 397 (BK/WH). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to B7 . **No** GO to B7 .
B7 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step B1. • **Were any continuous DTCs retrieved during Step B1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test C: LFC 29/DTC C1414 — Incorrect Vehicle Identification Code

Normal Operation

The restraints control module (RCM) monitors the electrical state of pins 10, 13 and 14 to determine if it is installed on the correct vehicle. If the RCM detects an incorrect condition on any of these pins, it will store a diagnostic trouble code (DTC) C1414 in memory and flash a lamp fault code (LFC) 29 (or higher priority code if one exists) on the air bag indicator.

Possible Causes

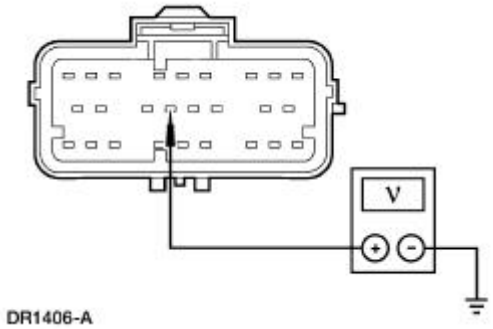
An incorrect vehicle identification code can be caused by:

- an RCM installed on the wrong vehicle.
- an incorrectly programmed RCM.
- vehicle ID pins not connected as expected.

PINPOINT TEST C: LFC 29/DTC C1414 — INCORRECT VEHICLE IDENTIFICATION CODE

Test Step	Result / Action to Take
C1 CHECK FOR A HARD OR INTERMITTENT DTC	

• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC C1414 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to C2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to C5 .
C2 CHECK THE VEHICLE IDENTIFICATION PINS NO. 1 AND NO. 2	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. **NOTE:** For this vehicle application, RCM C2041 pins 10 and 13 should be open circuited. • Key in OFF position. • Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. • Key in OFF position. • Disconnect: RCM C2041. • Make sure the RCM C2041 pin 10 and pin 13 connector slots are empty and no connection is made when connected to the RCM. • **Are the RCM C2041 pin 10 and pin 13 connector slots empty?**	**Yes** GO to C3 . **No** REPAIR any concern found at the RCM C2041 pin 10 and pin 13 connector slots. GO to C6 .
C3 CHECK THE VEHICLE IDENTIFICATION PIN NO. 3	
NOTE: For this vehicle application, RCM C2041 pin 14, circuit 611 (WH/OG) should be connected to ignition voltage. • Measure the voltage at RCM C2041 pin 14, circuit 611 (WH/OG), harness side and ground.	**Yes** GO to C4 . **No** REPAIR the circuit. GO to C6 .

 ● **Is the voltage greater than 10 volts?**	
C4 CHECK THE RCM PROGRAMMED VEHICLE ID	
● Enter the following diagnostic mode on the diagnostic tool: PID/Data Monitor and Record. ● Select PID VID No. 1, VID No. 2, and VID No. 3. ● **Was vehicle ID No. 1 and vehicle ID No. 2 no connect and vehicle ID No. 3 ignition?**	**Yes** GO to C5 . **No** INSTALL a new RCM. GO to C6 .
C5 CHECK FOR AN INTERMITTENT FAULT	
● Refer to the continuous DTCs recorded during Step C1. ● **Was the continuous DTC retrieved during Step C1 an intermittent fault or were you directed to this step from Step C4?**	**Yes** CHECK for causes of an intermittent open on circuit 611 (WH/OG). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to C6 . **No** GO to C6 .
C6 CHECK FOR ADDITIONAL DTCs	
● Refer to continuous DTCs recorded during Step C1. ● **Were any continuous DTCs retrieved during Step C1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the

	system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test D: LFC 15/DTC B 1887— Driver Air Bag Circuit Shorted to Ground

Normal Operation

The restraints control module (RCM) checks for driver air bag circuit shorts to ground by monitoring the voltage of circuits 614 (GY/OG) and 615 (GY/WH) at pins 3 and 4. If the RCM detects a short to ground on either of these pins, it will store a diagnostic trouble code (DTC) B1887 in memory and flash a lamp fault code (LFC) 15 (or higher priority code if one exists) on the air bag indicator.

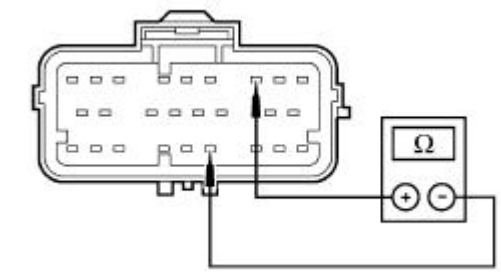
Possible Causes

A driver air bag circuit short to ground can be caused by:

- a short to ground on circuit 614 (GY/OG).
- a short to ground on circuit 615 (GY/WH).
- a short to ground on the clockspring (14A664).
- a short to ground on the driver air bag module.
- an RCM internal concern.

PINPOINT TEST D: LFC 15/DTC B1887 — DRIVER AIR BAG CIRCUIT SHORTED TO GROUND

Test Step	Result / Action to Take
D1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1887 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to D2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to D5 .

D2 CHECK THE DRIVER AIR BAG MODULE **WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section.** **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. ● Key in OFF position. ● Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. ● **Was DTC B1887 retrieved?**	**Yes** GO to D3 . **No** INSTALL a new driver air bag module. GO to D6 .
D3 CHECK THE DRIVER AIR BAG MODULE CIRCUIT ● Key in OFF position. ● Disconnect: RCM C2041. ● **NOTE:** Do not separate or remove shorting bars from RCM C2041. ● Measure the resistance between RCM C2041 pin 3, circuit 614 (GY/OG), harness side and RCM C2041 pin 21, circuit 397 (BK/WH), harness side.  DR0999-B ● **Is the resistance less than 10,000 ohms?**	**Yes** GO to D4 . **No** INSTALL a new RCM. GO to D6 .
D4 CHECK THE DRIVER AIR BAG MODULE WIRING AND THE CLOCKSPRING ● Disconnect: Driver Air Bag Module C216. ● Disconnect: Clockspring C218b. ● Inspect all crimps, terminals, wires and connectors in circuit 614 (GY/OG) feeding the RCM pin 3, circuit 615 (GY/WH) feeding pin 4, the clockspring C218b. Check for pinched wires and damaged connector pin terminals. ● **Was any damage found?**	**Yes** REPAIR as necessary. GO to D6 . **No** GO to D6 .

D5 CHECK FOR AN INTERMITTENT FAULT	
• Refer to the continuous DTCs recorded during Step D1. • **Was the continuous DTC retrieved during Step D1 an intermittent fault?**	**Yes** CHECK for causes of intermittent short to ground on circuit 614 (GY/OG), circuit 615 (GY/WH), and the clockspring assembly. Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to D6 . **No** GO to D6 .
D6 CHECK FOR ADDITIONAL DTCs	
• Refer to continuous DTCs recorded during Step D1. • **Were any continuous DTCs retrieved during Step D1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test E: LFC 15/DTC B1916 — Driver Air Bag Circuit Shorted to Battery or Ignition

Normal Operation

The restraints control module (RCM) checks for driver air bag circuit shorts to battery or ignition by monitoring the voltage of circuit 614 (GY/OG) and 615 (GY/WH) at pins 3 and 4. If the RCM detects a short to battery or ignition on either of these pins, it will store a diagnostic trouble code (DTC) B1916 in memory and flash a lamp fault code (LFC) 15 (or higher priority code if one exists) on the air bag indicator.

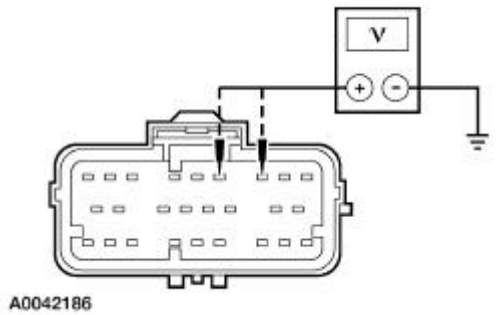
Possible Causes

A driver air bag circuit short to battery or ignition can be caused by:

- a short to battery or ignition on circuit 614 (GY/OG).
- a short to battery or ignition on circuit 615 (GY/WH).
- a short to battery or ignition on the clockspring.
- a short to battery or ignition on the driver air bag module.
- an RCM internal concern.

PINPOINT TEST E: LFC 15/DTC B1916 — DRIVER AIR BAG CIRCUIT SHORTED TO BATTERY OR IGNITION

Test Step	Result / Action to Take
E1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1916 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to E2 . **No** This in an intermittent fault. The fault condition is not present at this time. GO to E5 .
E2 CHECK THE DRIVER AIR BAG MODULE	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle**	**Yes** GO to E3 . **No** INSTALL a new driver air bag module. GO to E6 .

over the road. NOTE: The SRS must be fully operational and free of faults before releasing the vehicle to the customer. ● Key in OFF position. ● Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. ● **Was DTC B1916 retrieved?**	
E3 CHECK THE DRIVER AIR BAG MODULE CIRCUIT	
● Key in OFF position. ● Disconnect: Driver Air Bag Module Restraint System Diagnostic Tool. ● Disconnect: RCM C2041. ● Key in ON position. ● **NOTE:** Do not separate or remove shorting bars from RCM C2041. ● Measure the voltage between RCM C2041 pin 3, circuit 614 (GY/OG), harness side and ground; and between RCM C2041 pin 4, circuit 615 (GY/WH), harness side.  A0042186 ● **Are the voltages less than 0.2 volt?**	**Yes** INSTALL a new RCM. GO to E6 . **No** GO to E4 .
E4 CHECK THE DRIVER AIR BAG MODULE WIRING AND THE CLOCKSPRING	
● Disconnect: Clockspring C218b. ● Inspect all crimps, terminals, wires and connectors in circuit 614 (GY/OG) feeding the RCM pin 3, circuit 615 (GY/WH) feeding pin 4, and the clockspring C218b. Check for pinched wires and damaged connector pin terminals. ● **Was any damage found?**	**Yes** REPAIR as necessary. GO to E6 . **No** GO to E6 .
E5 CHECK FOR AN INTERMITTENT FAULT	
● Refer to the continuous DTCs recorded during Step E1. ● **Was the continuous DTC retrieved during Step E1 an intermittent fault?**	**Yes** CHECK for causes of intermittent short to battery or ignition on circuit 614 (GY/OG), circuit 615 (GY/WH), and the clockspring assembly. Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO

	to E6 . **No** GO to E6 .
E6 CHECK FOR ADDITIONAL DTCs	
• Refer to continuous DTCs recorded during Step E1. • **Were any continuous DTCs retrieved during Step E1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test F: LFC 16/DTC B1888 — Passenger Air Bag Circuit Shorted to Ground

Normal Operation

The restraints control module (RCM) checks for passenger air bag circuit shorts to ground by monitoring the voltage of circuits 607 (LB/OG) and 616 (PK/BK) at pins 6 and 7. If the RCM detects a short to ground on either of these pins, it will store a diagnostic trouble code (DTC) B1888 in memory and flash a lamp fault code (LFC) 16 (or higher priority code if one exists) on the air bag indicator.

Possible Causes

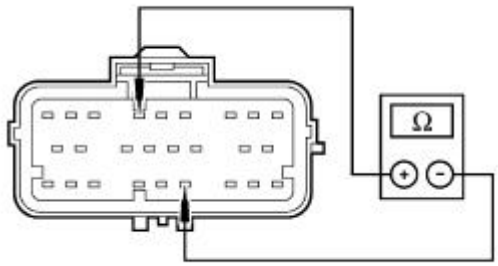
A passenger air bag circuit short to ground can be caused by:

- a short to ground on circuit 607 (LB/OG).
- a short to ground on circuit 616 (PK/BK).
- a short to ground on the passenger air bag module.
- an RCM internal concern.

PINPOINT TEST F: LFC 16/DTC B1888 — PASSENGER AIR BAG CIRCUIT SHORTED TO GROUND

Test Step	Result / Action to Take

F1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1888 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to F2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to F5 .
F2 CHECK THE PASSENGER AIR BAG MODULE	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. • Key in OFF position. • Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. • Key in OFF position. • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1888 retrieved?**	**Yes** GO to F3 . **No** INSTALL a new passenger air bag module. GO to F6 .
F3 CHECK THE PASSENGER AIR BAG MODULE CIRCUIT	
• Key in OFF position. • Disconnect: RCM C2041. • **NOTE:** Do not separate or remove shorting bars from RCM C2041. • Measure the resistance between RCM C2041 pin 6, circuit 607 (LB/OG), harness side and RCM C2041 pin 21, circuit 397 (BK/WH), harness side.	**Yes** GO to F4 . **No** INSTALL a new RCM. GO to F6 .

 DR1000-B ● **Is the resistance less than 10,000 ohms?**	
F4 CHECK THE PASSENGER AIR BAG MODULE WIRING	
● Disconnect: Passenger Air Bag Module C256. ● Inspect all crimps, terminals, wires and connectors in circuit 607 (LB/OG) feeding the RCM pin 6, circuit 616 (PK/BK) feeding pin 7. Check for pinched wires and damaged connector pin terminals. ● **Was any damage found?**	**Yes** REPAIR as necessary. GO to F6 . **No** GO to F6 .
F5 CHECK FOR AN INTERMITTENT FAULT	
● Refer to the continuous DTCs recorded during Step F1. ● **Was the continuous DTC retrieved during Step F1 an intermittent fault?**	**Yes** CHECK for causes of intermittent short to ground on circuit 607 (LB/OG) and circuit 616 (PK/BK). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to F6 . **No** GO to F6 .
F6 CHECK FOR ADDITIONAL DTCs	
● Refer to the continuous DTCs recorded during Step F1. ● **Were any continuous DTCs retrieved during Step F1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system.

	REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test G: LFC 16/DTC B1925 — Passenger Air Bag Circuit Shorted to Battery or Ignition

Normal Operation

The restraints control module (RCM) checks for passenger air bag circuit shorts to battery or ignition by monitoring the voltage of circuits 607 (LB/OG) and 616 (PK/BK) at pins 6 and 7. If the RCM detects a short to battery or ignition on either of these pins, it will store a diagnostic trouble code (DTC) B1925 in memory and flash a lamp fault code (LFC) 16 (or higher priority code if one exists) on the air bag indicator.

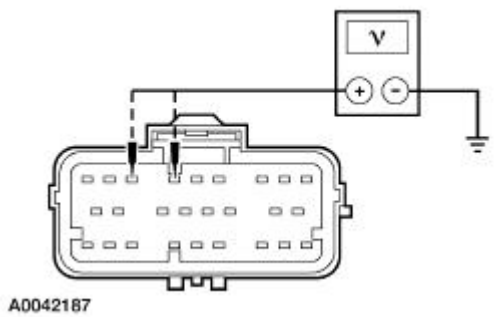
Possible Causes

A passenger air bag circuit short to battery or ignition can be caused by:

- a short to battery or ignition on circuit 607 (LB/OG).
- a short to battery or ignition on circuit 616 (PK/BK).
- a short to battery or ignition on the passenger air bag module.
- an RCM internal concern.

PINPOINT TEST G: LFC 16/DTC B1925 — PASSENGER AIR BAG CIRCUIT SHORTED TO BATTERY OR IGNITION

Test Step	Result / Action to Take
G1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1925 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to G2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to G5 .

G2 CHECK THE PASSENGER AIR BAG MODULE **WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section.** **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. ● Key in OFF position. ● Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. ● **Was DTC B1925 retrieved?**	**Yes** GO to G3 . **No** INSTALL a new passenger air bag module. GO to G6 .
G3 CHECK THE PASSENGER AIR BAG MODULE CIRCUIT ● Key in OFF position. ● Disconnect: Passenger Air Bag Module Restraint System Diagnostic Tool. ● Disconnect: RCM C2041. ● Key in ON position. ● **NOTE:** Do not separate or remove shorting bars from RCM C2041. ● Measure the voltage between RCM C2041 pin 6, circuit 607 (LB/OG), harness side and ground; and between RCM C2041 pin 7, circuit 616 (PK/BK), harness side and ground.  A0042187 ● **Are the voltages less than 0.2 volt?**	**Yes** INSTALL a new RCM. GO to G6 . **No** GO to G4 .
G4 CHECK THE PASSENGER AIR BAG MODULE WIRING ● Inspect all crimps, terminals, wires and connectors in circuit 607 (LB/OG) feeding the RCM pin 6, circuit 616 (PK/BK) feeding pin 7. Check for pinched wires and damaged connector pin terminals. ● **Was any damage found?**	**Yes** REPAIR as necessary. GO to G6 .

	No GO to G6 .
G5 CHECK FOR AN INTERMITTENT FAULT ● Refer to the continuous DTCs recorded during Step G1. ● **Was the continuous DTC retrieved during Step G1 an intermittent fault?**	**Yes** CHECK for causes of intermittent short to battery or ignition on circuit 607 (LB/OG) and circuit 616 (PK/BK). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to G6 . **No** GO to G6 .
G6 CHECK FOR ADDITIONAL DTCs ● Refer to the continuous DTCs recorded during Step G1. ● **Were any continuous DTCs retrieved during Step G1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test H: LFC 32/DTC B1932 — Driver Air Bag Circuit Resistance High

Normal Operation

The restraints control module (RCM) monitors the resistance for the driver air bag ignitor by measuring the resistance between pins 3 and 4. If the RCM detects high resistance between these pins, it will store a diagnostic trouble code (DTC) B1932 in memory and flash a lamp fault code (LFC) 32 (or higher priority code if one exists) on the air bag indicator.

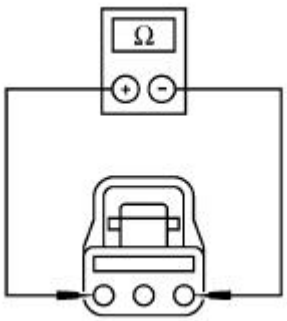
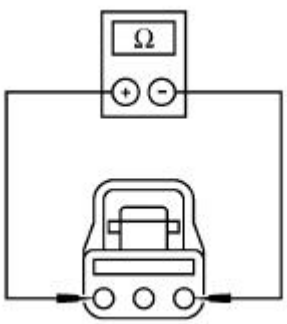
Possible Causes

Driver air bag high resistance can be caused by:

- a poor connection or corrosion in the driver air bag module circuits or the clockspring.
- an open circuit or high resistance in the clockspring windings.
- an open circuit or high resistance in the wiring harness.
- an open circuit or high resistance in the driver air bag module.
- an RCM internal concern.

PINPOINT TEST H: LFC 32/DTC B1932 — DRIVER AIR BAG CIRCUIT RESISTANCE HIGH

Test Step	Result / Action to Take
H1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1932 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to H2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to H5 .
H2 CHECK THE DRIVER AIR BAG MODULE	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be**	**Yes** GO to H3 . **No** INSTALL a new driver air bag module. GO to H6 .

removed before operating the vehicle over the road. NOTE: After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. ● Key in OFF position. ● Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. ● **Was DTC B1932 retrieved?**	
H3 CHECK THE DRIVER AIR BAG MODULE CIRCUIT	
● Key in OFF position. ● Disconnect: RCM C2041. ● Disconnect: Driver Air Bag Restraint System Diagnostic Tool. ● **NOTE:** By disconnecting the RCM connector, circuit 614 (GY/OG) and circuit 615 (GY/WH) of the RCM connector are shorted together with a shorting bar. Do not remove the shorting bar. ● **NOTE:** Zero the multimeter prior to taking the measurement. ● Measure the resistance between driver air bag C216, circuit 614 (GY/OG), harness side and driver air bag C216, circuit 615 (GY/WH), harness side.  DR0292-B ● **Is the resistance greater than 0.5 ohm?**	**Yes** GO to H4 . **No** INSTALL a new RCM. GO to H6 .
H4 CHECK THE CLOCKSPRING	
● Disconnect: Clockspring C218b. ● **NOTE:** By disconnecting the clockspring connector, the connector pins are shorted together with a shorting bar. Do not remove the shorting bar. ● **NOTE:** Zero the multimeter prior to taking the measurement. ● Measure the resistance between clockspring C218b, circuit 614 (GY/OG), and circuit 615 (GY/WH), harness side.  DR0292-B ● **Is the resistance greater than 0.5 ohm?**	**Yes** INSTALL a new clockspring. GO to H6 . **No** REPAIR the circuit (s) as necessary. GO to H6 .
H5 CHECK FOR AN INTERMITTENT FAULT	
● Refer to the continuous DTCs recorded during Step H1.	**Yes**

• **Was the continuous DTC retrieved during Step H1 an intermittent fault?**	CHECK for causes of intermittent high resistance on circuit 614 (GY/OG), circuit 615 (GY/WH), and the clockspring assembly. Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to H6 . **No** GO to H6 .
H6 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step H1. • **Were any continuous DTCs retrieved during Step H1.**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test I: LFC 33/DTC B1933 — Passenger Air Bag Circuit Resistance High

Normal Operation

The restraints control module (RCM) monitors the resistance of the passenger air bag ignitor by measuring the resistance between pins 6 and 7. If the RCM detects high resistance between these pins, it will store a diagnostic trouble code (DTC) B1933 in memory and flash a lamp fault code (LFC) 33 (or higher priority code if one exists) on the air bag indicator.

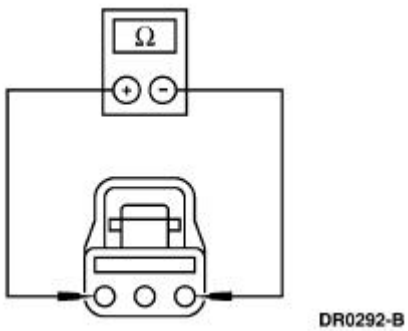
Possible Causes

A passenger air bag high resistance can be caused by:

- a poor connection or corrosion in the passenger air bag module circuits.
- an open circuit or high resistance in the wiring harness.
- an open circuit or high resistance in the passenger air bag module.
- an RCM internal concern.

PINPOINT TEST I: LFC 33/DTC B1933 — PASSENGER AIR BAG CIRCUIT RESISTANCE HIGH

Test Step	Result / Action to Take
I1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1933 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to I2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to I4 .
I2 CHECK THE PASSENGER AIR BAG MODULE	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. • Key in OFF position. • Deactivate the system. Refer to Air Bag Supplemental Restraint	**Yes** GO to I3 . **No** INSTALL a new passenger air bag module. GO to I5 .

System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. ● **Was DTC B1933 retrieved?**	
I3 CHECK THE PASSENGER AIR BAG MODULE CIRCUIT	
● Key in OFF position. ● Disconnect: RCM C2041. ● Disconnect: Passenger Air Bag Restraint System Diagnostic Tool. ● **NOTE:** By disconnecting the RCM connector, circuit 607 (LB/OG) and circuit 616 (PK/BK) of the RCM connector are shorted together with a shorting bar. Do not remove the shorting bar. ● **NOTE:** Zero the multimeter prior to taking the measurement. ● Measure the resistance between passenger air bag C256, circuit 607 (LB/OG), harness side and passenger air bag C256, circuit 616 (PK/BK), harness side.  DR0292-B ● **Is the resistance greater than 0.5 ohm?**	**Yes** REPAIR the circuit (s) as necessary. GO to I5 . **No** INSTALL a new RCM. GO to I5 .
I4 CHECK FOR AN INTERMITTENT FAULT	
● Refer to the continuous DTCs recorded during Step I1. ● **Was the continuous DTC retrieved during Step I1 an intermittent fault?**	**Yes** CHECK for causes of intermittent high resistance on circuit 607 (LB/OG) and circuit 616 (PK/BK). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to I5 . **No** GO to I5 .
I5 CHECK FOR ADDITIONAL DTCs	
● Refer to the continuous DTCs recorded during Step I1. ● **Were any continuous DTCs retrieved during Step I1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic

	Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test J: LFC 34/DTC B1934 — Driver Air Bag Circuit Resistance Low

Normal Operation

The restraints control module (RCM) monitors the resistance of the driver air bag ignitor by measuring the resistance between pins 3 and 4. If the RCM detects low resistance between these pins, it will store a diagnostic trouble code (DTC) B1934 in memory and flash a lamp fault code (LFC) 34 (or higher priority code if one exists) on the air bag indicator.

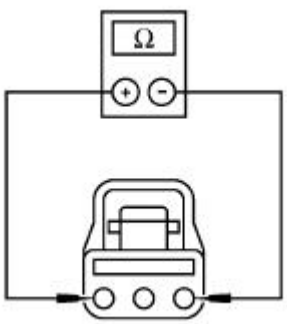
Possible Causes

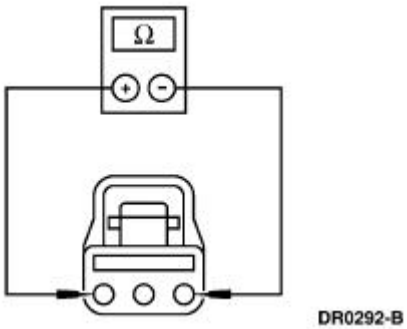
Driver air bag low resistance can be caused by:

- a short in the clockspring windings.
- a short in the wiring harness.
- a low resistance in the driver air bag module.
- an RCM internal concern.
- worn or damaged short bar or camming beam.

PINPOINT TEST J: LFC 34/DTC B1934 — DRIVER AIR BAG CIRCUIT RESISTANCE LOW

Test Step	Result / Action to Take
J1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test.	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the

• **Was DTC B1934 retrieved during the on-demand self test?**	on-demand self test. GO to J2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to J5 .
J2 CHECK THE DRIVER AIR BAG MODULE	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. • Key in OFF position. • Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. • Key in OFF position. • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1934 retrieved?**	**Yes** GO to J3 . **No** INSTALL a new driver air bag module. GO to J6 .
J3 CHECK THE DRIVER AIR BAG MODULE CIRCUIT	
• Key in OFF position. • Disconnect: Driver Air Bag Restraint System Diagnostic Tool. • Measure the resistance between driver air bag C216, circuit 614 (GY/OG), harness side and between driver air bag C216, circuit 615 (GY/WH), harness side.  DR0292-B • **Is the resistance greater than 10,000 ohms?**	**Yes** INSTALL a new RCM. GO to J6 . **No** GO to J4 .
J4 CHECK THE CLOCKSPRING	

• Disconnect: Clockspring C218b. • Measure the resistance between clockspring C218b, circuit 614 (GY/OG) and circuit 615 (GY/WH), harness side.  • **Is the resistance greater than 10,000 ohms?**	**Yes** INSTALL a new clockspring. GO to J6 . **No** REPAIR the circuit (s) as necessary. GO to J6 .
J5 CHECK FOR AN INTERMITTENT FAULT	
• Refer to the continuous DTCs recorded during Step J1. • **Was the continuous DTC retrieved during Step J1 an intermittent fault?**	**Yes** CHECK for causes of intermittent low resistance on circuit 614 (GY/OG), circuit 615 (GY/WH), and the clockspring assembly. Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to J6 . **No** GO to J6 .
J6 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step J1. • **Were any continuous DTCs retrieved during Step J1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System

	(SRS) in this section. CLEAR all DTCs.

Pinpoint Test K: LFC 35/DTC B1935 — Passenger Air Bag Circuit Resistance Low

Normal Operation

The restraints control module (RCM) monitors the resistance of the passenger air bag ignitor by measuring the resistance between pins 6 and 7. If the RCM detects low resistance between these pins, it will store a diagnostic trouble code (DTC) B1935 in memory and flash a lamp fault code (LFC) 35 (or higher priority code if one exists) on the air bag indicator.

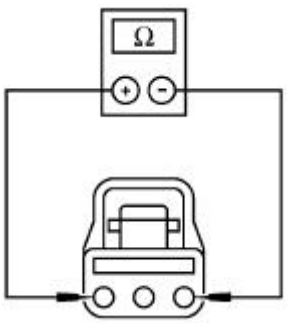
Possible Causes

Passenger air bag low resistance can be caused by:

- a short in the wiring harness.
- a low resistance in the passenger air bag module.
- an RCM internal concern.
- a worn or damaged connector shorting bar or camming beam.

PINPOINT TEST K: LFC 35/DTC B1935 — PASSENGER AIR BAG CIRCUIT RESISTANCE LOW

Test Step	Result / Action to Take
K1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1935 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to K2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to K4 .
K2 CHECK THE PASSENGER AIR BAG MODULE	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section.	**Yes** GO to K3 . **No** INSTALL a new

The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE: Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. ● Key in OFF position. ● Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Key in ON position. ● Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. ● **Was DTC B1935 retrieved?**	passenger air bag module. GO to K5 .
K3 CHECK THE PASSENGER AIR BAG MODULE CIRCUIT	
● Key in OFF position. ● Disconnect: Passenger Air Bag Restraint System Diagnostic Tool. ● Measure the resistance between passenger air bag C256, circuit 607 (LB/OG), harness side and passenger air bag C256, circuit 616 (PK/BK), harness side.  DR0292-B ● **Is the resistance greater than 10,000 ohm?**	**Yes** INSTALL a new RCM. GO to K5 . **No** REPAIR the circuit (s) as necessary. GO to K5 .
K4 CHECK FOR AN INTERMITTENT FAULT	
● Refer to the continuous DTCs recorded during Step K1. ● **Was the continuous DTC retrieved during Step K1 an intermittent fault?**	**Yes** CHECK for causes of intermittent low resistance on circuit 607 (LB/OG) and circuit 616 (PK/BK). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent

	concerns found. GO to K5 . **No** GO to K5 .
K5 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step K1. • **Were any continuous DTCs retrieved during Step K1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test L: B1892 — Air Bag Tone Warning Indicator Circuit Shorted to Ground or Open

Normal Operation

The restraints control module (RCM) monitors its connection to the generic electronic module (GEM) at C201e pin 10. This connection is used to signal a chime if the air bag indicator is inoperative and another SRS fault exists. If the RCM detects a short to ground or open on the connection to the GEM, it will store a diagnostic trouble code (DTC) B1892 in memory.

Possible Causes

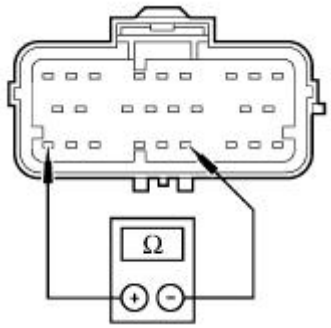
An air bag tone warning indicator circuit short to ground or open can be caused by:

- a short to ground or open on circuit 1083 (LB/BK).
- a damaged or inoperative GEM.

PINPOINT TEST L: DTC B1892 — AIR BAG TONE WARNING INDICATOR CIRCUIT SHORTED TO GROUND OR OPEN

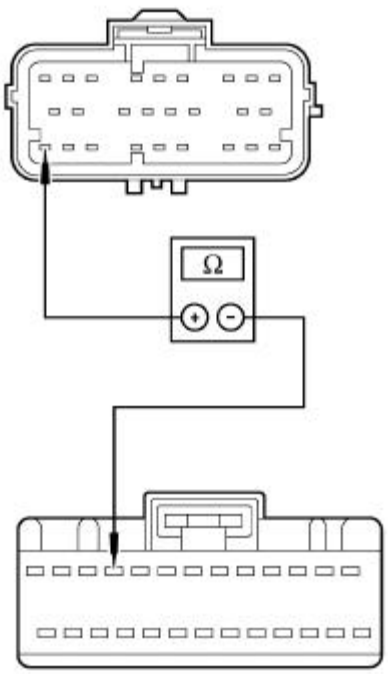
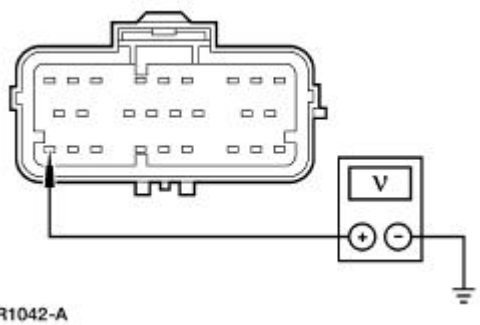
Test Step	Result / Action to Take
L1 CHECK FOR A HARD OR INTERMITTENT DTC	

• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1892 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to L2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to L5 .
L2 CHECK THE AIR BAG TONE WARNING INDICATOR CIRCUIT	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. • Key in OFF position. • Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. • Key in OFF position. • Disconnect: RCM C2041. • Disconnect: GEM C201e. • Measure the resistance between RCM C2041 pin 26, circuit 1083 (LB/BK), harness side and RCM C2041 pin 21, circuit 397 (BK/WH), harness side.	**Yes** REPAIR the circuit. GO to L6 . **No** GO to L3 .



DR1013-A

- **Is the resistance less than 10,000 ohms?**

L3 CHECK THE AIR BAG TONE WARNING INDICATOR MODULE CIRCUIT	
• Measure the resistance between RCM C2041 pin 26, circuit 1083 (LB/BK), harness side and GEM C201e pin 10, circuit 1083 (LB/BK), harness side.  DR1407-A • **Is the resistance greater than 10 ohms?**	**Yes** REPAIR the circuit. GO to L6 . **No** GO to L4 .
L4 CHECK THE AIR BAG TONE WARNING INDICATOR	
• Disconnect: GEM C201e. • Key in ON position. • Measure the voltage between RCM C2041 pin 26, circuit 1083 (LB/BK), harness side and ground.  DR1042-A	**Yes** INSTALL a new GEM. GO to L6 . **No** INSTALL a new RCM. GO to L6 .

• **Is the voltage less than 1.0 volt?**	
L5 CHECK FOR AN INTERMITTENT FAULT	
• Refer to the continuous DTCs recorded during Step L1. • **Was the continuous DTC retrieved during Step L1 an intermittent fault?**	**Yes** CHECK for causes of intermittent short to ground or open on circuit 1083 (LB/BK). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to L6 . **No** GO to L6 .
L6 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step L1. • **Were any continuous DTCs retrieved during Step L1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test M: DTC B1891 — Air Bag Tone Warning Indicator Circuit Shorted to Battery or Ignition

Normal Operation

The restraints control module (RCM) monitors its connection to the generic electronic module (GEM) at pin 10. This connection is used to signal a chime if the air bag indicator is inoperative and another SRS fault exists. If the RCM detects a short to battery or ignition on the connection to the GEM, it will store a diagnostic trouble code (DTC) B1891 in memory.

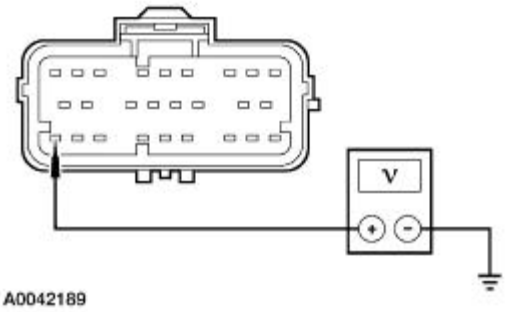
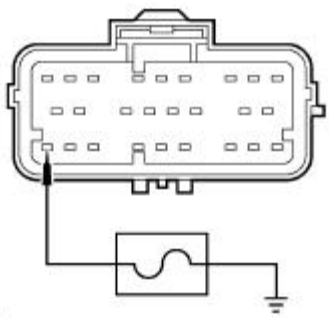
Possible Causes

An air bag tone warning indicator circuit short to battery or ignition can be caused by:

- a short to battery or ignition on circuit 1083 (LB/BK).
- a damaged or inoperative GEM.
- an RCM internal concern.

PINPOINT TEST M: DTC B1891 — AIR BAG TONE WARNING INDICATOR CIRCUIT SHORTED TO BATTERY OR IGNITION

Test Step	Result / Action to Take
M1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1891 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to M2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to M4 .
M2 CHECK THE AIR BAG TONE WARNING INDICATOR CIRCUIT	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer.	**Yes** GO to M3 . **No** REPAIR the circuit. GO to M5 .

• Key in OFF position. • Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. • Key in OFF position. • Disconnect: RCM C2041. • Disconnect: GEM C201e. • Key in ON position. • Measure the voltage between RCM C2041 pin 26, circuit 1083 (LB/BK), harness side and ground.  A0042189 • **Is the voltage less than 0.2 volt?**	
M3 CHECK THE AIR BAG TONE WARNING INDICATOR	
• Key in OFF position. • Connect: GEM C201e. • Key in ON position. • Jumper RCM C2041 pin 26, circuit 1083 (LB/BK), harness side to ground.  DR1043-A • **Does the GEM generate a tone?**	**Yes** INSTALL a new RCM. GO to M5 . **No** INSTALL a new GEM. GO to M5 .
M4 CHECK FOR AN INTERMITTENT FAULT	
• Refer to continuous DTCs recorded during Step M1. • **Was the continuous DTC retrieved during step M1 an intermittent fault?**	**Yes** Check for causes of intermittent short to ground or open on circuit 1083 (LB/BK). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to M5 . **No** GO to M5 .

M5 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step M1. • **Were any continuous DTCs retrieved during Step M1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test N: DTC B1869 — Air Bag Indicator Inoperative

Normal Operation

The air bag indicator is designed to illuminate for 6 (+/-2) seconds when the ignition switch is turned to the RUN position. This initial 6 seconds of illumination is considered normal operation and is called proveout of the air bag indicator. The air bag indicator is then used to warn the driver that there is a fault in the air bag supplemental restraint system (SRS).

The restraints control module (RCM) monitors the air bag indicator for open and short to ground conditions. If the RCM detects an open or short to ground condition on the air bag indicator circuit, it will store a diagnostic trouble code (DTC) B1869 in memory.

If the RCM detects an air bag indicator failure in addition to another SRS failure, the RCM will send a signal to the generic electronic module (GEM) to produce five sets of five tone bursts.

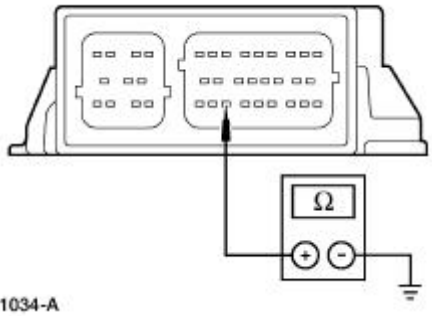
Possible Causes

An air bag indicator inoperative condition can be caused by:

- a damaged wiring on circuit 608 (BK/YE).
- a damaged or burned out air bag indicator.
- worn or damaged instrument cluster.
- an RCM internal concern.

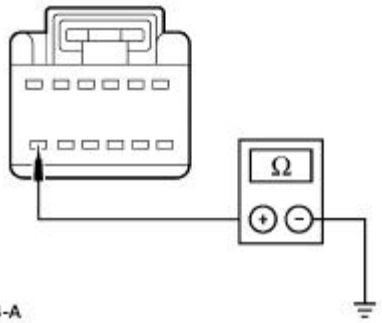
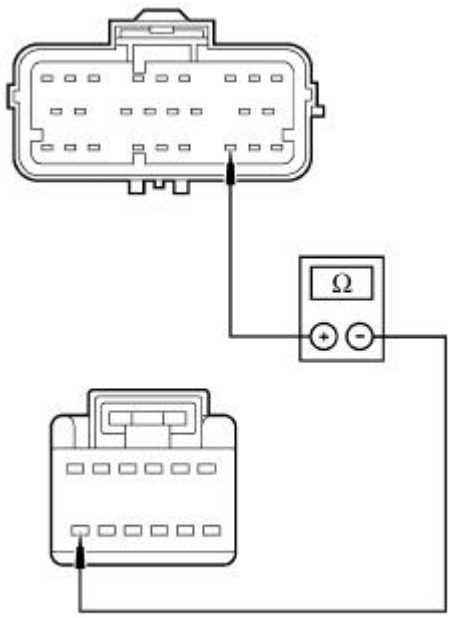
PINPOINT TEST N: DTC B1869 — AIR BAG INDICATOR INOPERATIVE

Test Step	Result / Action to Take
N1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1869 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to N2 . **No** This is an intermittent fault. The fault conditions not present at this time. GO to N5 .
N2 CHECK THE RCM	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. • Key in OFF position. • Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. • Key in OFF position. • Disconnect: RCM C2041. • Measure the resistance between RCM C2041 pin 20, component side and a known good chassis ground.	**Yes** INSTALL a new RCM. GO to N6 . **No** GO to N3 .



DR1034-A

- **Is the resistance less than 10 ohms?**

N3 CHECK CIRCUIT 608 (BK/YE) FOR A SHORT TO GROUND	
• Key in OFF position. • Disconnect: Instrument Cluster C220a. • Measure the resistance to ground at instrument cluster C220a pin 12, circuit 608 (BK/YE).  DR1614-A • **Is the resistance less than 100 ohms?**	**Yes** REPAIR the circuit. GO to N6 . **No** GO to N4 .
N4 CHECK CIRCUIT 608 (BK/YE) FOR AN OPEN	
• Disconnect: Instrument Cluster C220a. • Measure the resistance between RCM C2041 pin 20, circuit 608 (BK/YE), harness side and instrument cluster C220a pin 12, circuit 608 (BK/YE), harness side.  DR1408-A	**Yes** REPAIR the circuit. GO to N6 . **No** REPAIR the instrument cluster. GO to N6 .

• **Is the resistance greater than 10 ohms?**	
N5 CHECK FOR AN INTERMITTENT FAULT	
• Refer to the continuous DTCs recorded during Step N1. • **Was the continuous DTC retrieved during Step N1 an intermittent fault?**	**Yes** CHECK for causes of intermittent short to ground or open on circuit 608 (BK/YE). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to N6 . **No** GO to N6 .
N6 CHECK FOR ADDITIONAL DTCs	
• Refer to the continuous DTCs recorded during Step N1. • **Were any continuous DTCs retrieved during Step N1?**	**Yes** Do not clear any DTCs until all DTCs have been resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test O: DTC B1870 — Air Bag Indicator Shorted to Battery

Normal Operation

The air bag indicator is designed to illuminate for 6 (+/-2) seconds when the ignition switch is turned to the RUN position. This initial 6 seconds of illumination is considered normal operation and is called proveout of the air bag indicator. The air bag indicator is then used to warn the driver that there is a fault in the air bag supplemental restraint system (SRS).

While the air bag indicator is lit, the restraints control module (RCM) monitors the air bag indicator for short to battery conditions. If the RCM detects a short to battery condition on the air bag indicator

circuit, it will store a diagnostic trouble code (DTC) B1870 in memory.

If the RCM detects an air bag indicator failure in addition to another SRS failure, the RCM will send a signal to the generic electronic module (GEM) to produce five sets of five tone bursts.

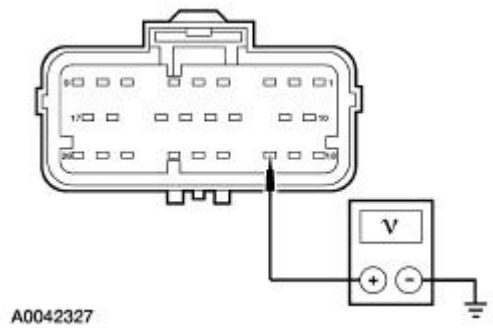
Possible Causes

An air bag indicator short to battery condition can be caused by:

- damaged wiring on circuit 608 (BK/YE).
- an instrument cluster malfunction.
- an RCM internal concern.

PINPOINT TEST O: DTC B1870 — AIR BAG INDICATOR SHORTED TO BATTERY

Test Step	Result / Action to Take
O1 CHECK FOR A HARD OR INTERMITTENT DTC	
• Key in OFF position. • Connect the diagnostic tool. Scan Tool • Key in ON position. • Enter the following diagnostic mode on the diagnostic tool: Retrieve/Clear Continuous DTCs. • Retrieve and record any continuous DTCs for use later in this pinpoint test. • Enter the following diagnostic mode on the diagnostic tool: On-Demand Self Test. • **Was DTC B1870 retrieved during the on-demand self test?**	**Yes** This is a hard fault. The fault condition is still present. This fault cannot be cleared until it is corrected and the DTC is no longer retrieved during the on-demand self test. GO to O2 . **No** This is an intermittent fault. The fault condition is not present at this time. GO to O4 .
O2 CHECK THE AIR BAG INDICATOR CIRCUIT	
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE:** Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The**	**Yes** INSTALL a new RCM. GO to O5 . **No** GO to O3 .

restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE: After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. ● Key in OFF position. ● Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Disconnect: RCM C2041. ● Key in ON position. ● **Is the air bag indicator illuminated?**	
O3 CHECK AIR BAG INDICATOR CIRCUIT FOR SHORT TO BATTERY	
● Key in OFF position. ● Disconnect: RCM C2041. ● Disconnect: Instrument Cluster C220a. ● Key in ON position. ● Measure the voltage between RCM C2041 pin 20, circuit 608 (BK/YE), harness side and ground.  ● **Is the voltage less than 0.2 volt?**	**Yes** REPAIR the instrument cluster. GO to O5 . **No** REPAIR the circuit. GO to O5 .
O4 CHECK FOR AN INTERMITTENT FAULT	
● Refer to the continuous DTCs recorded during Step O1. ● **Was the continuous DTC retrieved during Step O1 an intermittent fault?**	**Yes** CHECK for causes of intermittent short to battery on circuit 608 (BK/YE). Attempt to recreate the hard fault by flexing the wire harness and cycling the ignition key frequently. REPAIR any intermittent concerns found. GO to O5 . **No** GO to O5 .
O5 CHECK FOR ADDITIONAL DTCs	
● Refer to the continuous DTCs recorded during Step O1. ● **Were any continuous DTCs retrieved during Step O1?**	**Yes** Do not clear any DTCs until all DTCs have been

	resolved. GO to the Restraints Control Module (RCM) Diagnostic Trouble Code (DTC) Priority Table in this section for pinpoint test direction. **No** RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. CLEAR all DTCs.

Pinpoint Test P: No Communication With The Restraints Control Module

Normal Operation

The RCM communicates with the scan tool using ISO 9141 communication mode through the data link connector (DLC).

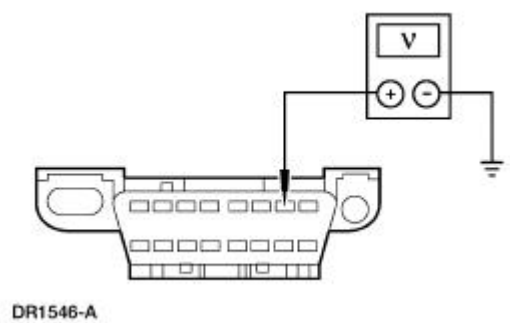
Possible Causes

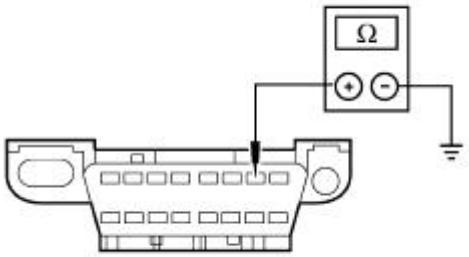
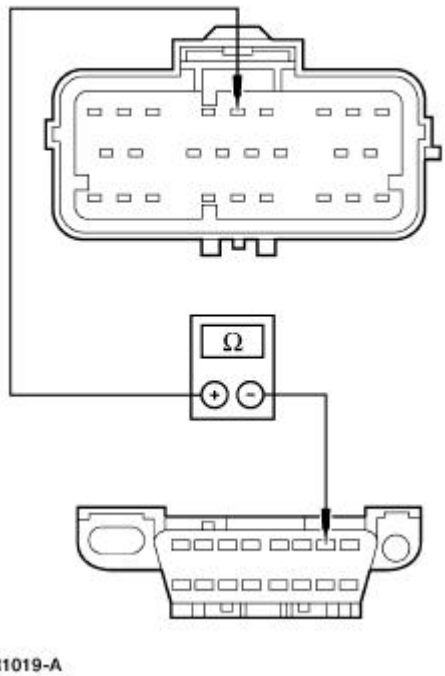
A no communication condition can be caused by:

- damage to circuit 70 (LB/WH).
- a damaged DLC.
- a damaged scan tool.
- an RCM internal concern.

PINPOINT TEST P: NO COMMUNICATION WITH THE RESTRAINTS CONTROL MODULE

Test Step	Result / Action to Take
P1 CHECK THE RCM CONNECTOR C2041 AND CONNECTOR PIN 5 FOR DAMAGE	**Yes** GO to P2. **No** REPAIR RCM C2041 or RCM C2041 pin 5 as necessary.
WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section. **The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is**	

reactivated to avoid non-deployment in a collision, resulting in possible personal injury. NOTE: Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road. NOTE:** After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road. NOTE:** The SRS must be fully operational and free of faults before releasing the vehicle to the customer. ● Key in OFF position. ● Deactivate the system. Refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section. ● Key in OFF position. ● Disconnect: RCM C2041. ● Inspect RCM C2041, harness side and RCM C2041, component side, pin 5 for damage. ● **Are RCM C2041 and RCM C2041 pin 5 OK?**	REACTIVATE the system.
P2 CHECK THE DLC CONNECTOR C251 AND CONNECTOR PIN 7 FOR DAMAGE	
● Inspect DLC C251 and DLC C251 pin 7 for damage. ● **Are DLC C251 and DLC C251 pin 7 OK?**	**Yes** GO to P3 . **No** REPAIR DLC C251 or DLC C251 pin 7 as necessary. RETEST the communication to RCM. RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section.
P3 CHECK CIRCUIT 70 (LB/WH) FOR SHORT TO BATTERY	
● Measure the voltage to ground at DLC C251 pin 7, circuit 70 (LB/WH).  DR1546-A ● **Can any voltage be measured?**	**Yes** REPAIR the battery short. RETEST the communication to RCM. RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section.

	No GO to P4 .
P4 CHECK CIRCUIT 70 (LB/WH) FOR SHORT TO GROUND	
• Measure the resistance to ground at DLC C251 pin 7, circuit 70 (LB/WH).  DR1547-A • **Is the resistance less than 10,000 ohms?**	**Yes** REPAIR the circuit. RETEST the communication to RCM. RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. **No** GO to P5 .
P5 CHECK CIRCUIT 70 (LB/WH) FOR AN OPEN	
• Measure the resistance between RCM C2041 pin 5, circuit 70 (LB/WH), harness side and DLC C251 pin 7, circuit 70 (LB/WH), harness side.  DR1019-A • **Is the resistance less than 5 ohms?**	**Yes** INSTALL a new RCM. RETEST the communication to RCM. RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section. **No** REPAIR the circuit. RETEST the communication to RCM. RECONNECT the system. REACTIVATE the system. PROVE OUT the system. REFER to Air Bag Supplemental Restraint System (SRS) in this section.

Inspection and Repair After a Supplemental Restraint System (SRS) Deployment

WARNING: If the supplemental restraint system (SRS) is being serviced, the system must be deactivated and restraint system diagnostic tools must be installed. Refer to Air Bag Supplemental Restraint System (SRS) in this section.

The air bag restraint system diagnostic tools must be removed and the air bag modules reconnected when the system is reactivated to avoid non-deployment in a collision, resulting in possible personal injury.

NOTE: Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road.**

NOTE: After diagnosing or repairing a SRS **the restraint system diagnostic tools must be removed before operating the vehicle over the road.**

NOTE: After diagnosing or repairing a seat system **the restraint system diagnostic tools must be removed before operating the vehicle over the road.**

NOTE: The SRS must be fully operational and free of faults before releasing the vehicle to the customer.

1. When any deployable device (driver air bag, passenger air bag, seat side air bag, safety belt pretensioner, etc.) or combination of devices are deployed and/or the RCM has the DTC B1231 (Crash Data Memory Full) in memory, the repair of the vehicle's supplemental restraint system (SRS) is to include the removal of all deployed devices and installation of new deployable devices, the removal and installation of new impact sensors, and the removal and installation of a new RCM.

2. When any damage to the impact sensor mounting points or mounting hardware has occurred, repair or install new mounting points and mounting hardware as needed.

3. When the driver air bag module has deployed a new clockspring must be installed.

4. Inspect the entire vehicle for damage, including the following components:
   - steering column.
   - instrument panel knee bolsters and mounting points.
   - instrument panel braces and brackets.
   - instrument panel and mounting points.
   - seats and seat mounting points.
   - safety belts, safety belt buckles, and safety belt retractors. For additional information, refer to Section 501-20A .
   - supplemental restraint system (SRS) wiring, wiring harnesses, and connectors.

5. After carrying out the review and inspection of the entire vehicle for damage, repair or install new components as needed.

Air Bag Disposal —Deployed Air Bag

1. **WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. This will reduce the risk of injury in the event of an accidental deployment.**

   Dispose of the deployed air bag modules and safety belt pretensioners in the same manner as any other part to be scrapped.

Air Bag Disposal —Undeployed Inoperative

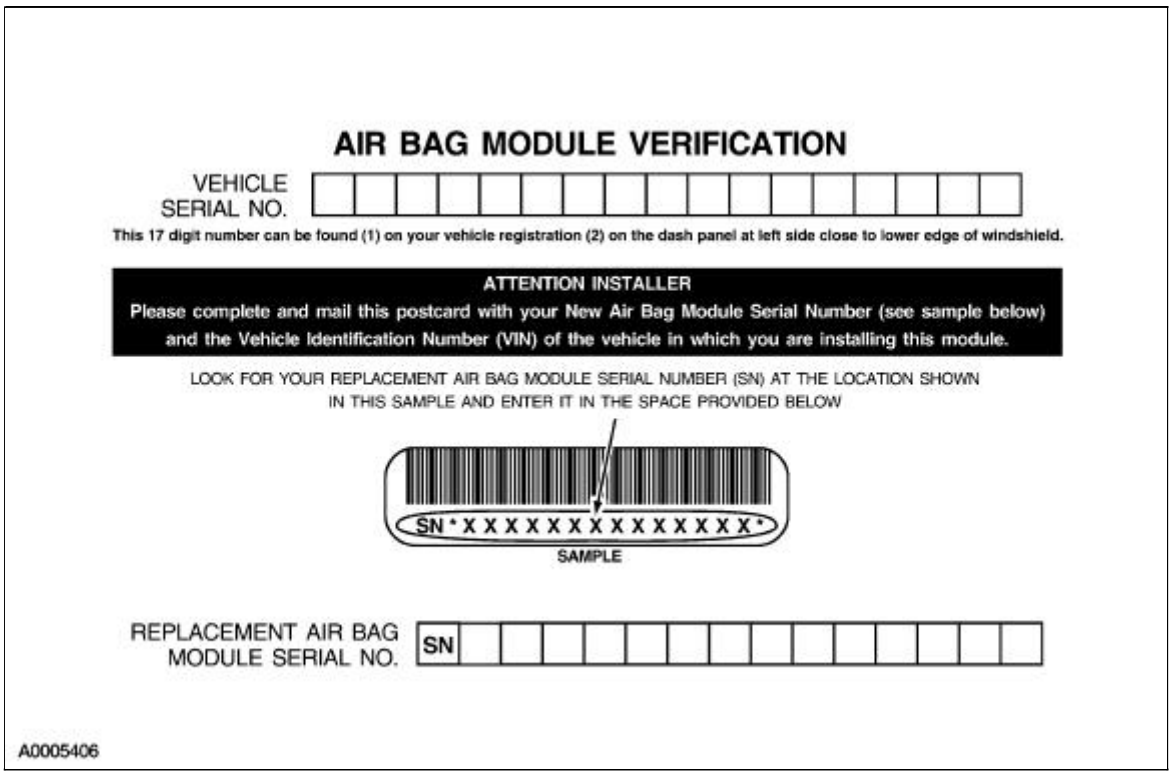
WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Never probe the connectors on the air bag module. Doing so can result in air bag deployment, which can result in personal injury.

WARNING: Carry a live air bag module with the air bag and trim cover or deployment door pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.

NOTE: All inoperative air bag modules and safety belt pretensioners have been placed on the Mandatory Return List. All discolored or damaged air bag modules must be treated the same as any inoperative live air bag being returned.

1. Remove the inoperative component from the vehicle. For additional information, refer to the appropriate air bag procedure in this section.


AIR BAG MODULE VERIFICATION
VEHICLE SERIAL NO.
This 17 digit number can be found (1) on your vehicle registration (2) on the dash panel at left side close to lower edge of windshield.
ATTENTION INSTALLER
Please complete and mail this postcard with your New Air Bag Module Serial Number (see sample below) and the Vehicle Identification Number (VIN) of the vehicle in which you are installing this module.
LOOK FOR YOUR REPLACEMENT AIR BAG MODULE SERIAL NUMBER (SN) AT THE LOCATION SHOWN IN THIS SAMPLE AND ENTER IT IN THE SPACE PROVIDED BELOW
SN * X X X X X X X X X X X X X *
SAMPLE
REPLACEMENT AIR BAG MODULE SERIAL NO.
SN
A0005406

2. **NOTE:** When installing a new air bag module, a prepaid return postcard is provided with the replacement air bag module. The serial number for the new part and the vehicle identification number (VIN) must be recorded and sent to Ford Motor Company.

   If installing a new air bag module, record the necessary information and return the inoperative air bag module to Ford Motor Company.

Air Bag Disposal —Driver, Undeployed, Scrapped Vehicle

Remote Deployment

WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module or safety belt retractor/pretensioner assembly. This will reduce the risk of injury in the event of an accidental deployment.

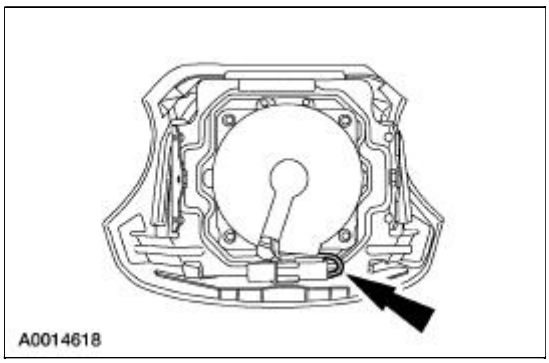
WARNING: Carry a live air bag module with the air bag and trim cover or deployment door pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Remote deployment is to be performed outdoors with all personnel at least 6.1 meters (20 feet) away to ensure personal safety. Due to the loud report which occurs when the air bag is deployed, hearing protection is required.

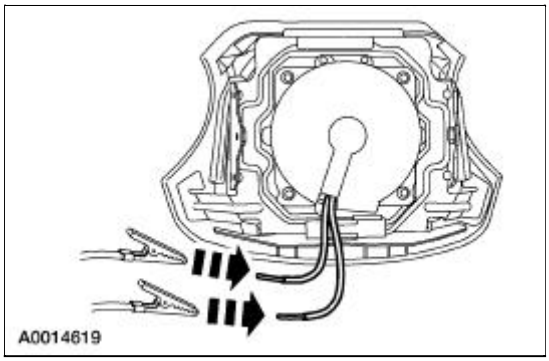
WARNING: Do not place the driver or passenger air bag module with the trim cover or deployment door facing down, as the forces of the deploying air bag can cause it to ricochet and cause personal injury.

1. Remove the driver air bag from the vehicle. For additional information, refer to Driver Air Bag Module in this section.

2. Cut and strip the wires at the driver air bag electrical connector.



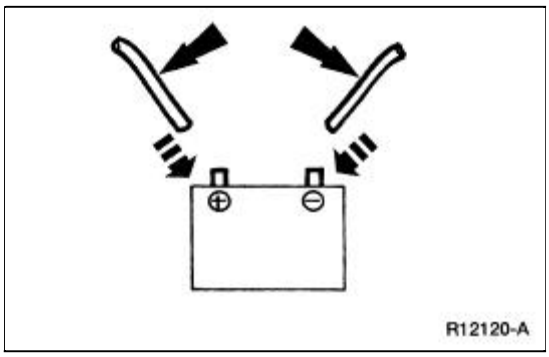
3. Obtain two wires (20 gauge minimum) at least 6.1 meters (20 feet) long and attach one end of each wire to the stripped ends of the driver air bag module wires.



4. Place the air bag module on a flat surface in an open outdoor area with the trim cover facing upward.

5. Remain at least 6.1 meters (20 feet) away from the air bag module.

6. Deploy the air bag module by touching the other ends of the two wires to the terminals of a 12–volt battery.



7. To allow for cooling, wait at least ten minutes before approaching the deployed air bag.

8. Dispose of the deployed air bag module in the same manner as any other part to be scrapped.

Air Bag Disposal —Passenger, Undeployed, Scrapped Vehicle

Remote Deployment

WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module or safety belt retractor/pretensioner assembly. This will reduce the risk of injury in the event of an accidental deployment.

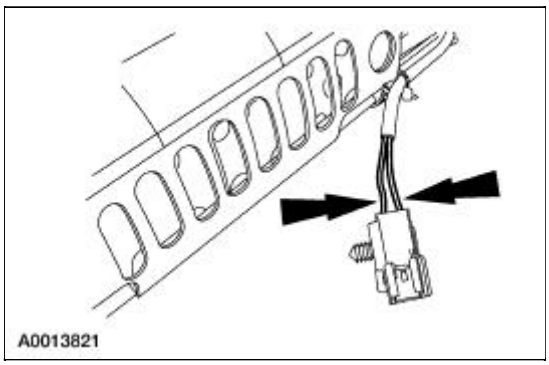
WARNING: Carry a live air bag module with the air bag and trim cover or deployment door pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Remote deployment is to be performed outdoors with all personnel at least 6.1 meters (20 feet) away to ensure personal safety. Due to the loud report which occurs when the air bag is deployed, hearing protection is required.

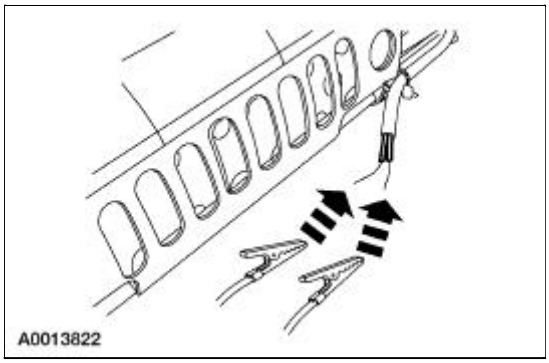
WARNING: Do not place the driver or passenger air bag module with the trim cover or deployment door facing down, as the forces of the deploying air bag can cause it to ricochet and cause personal injury.

1. Remove the passenger air bag from the vehicle. For additional information, refer to Passenger Air Bag Module in this section.

2. Cut and strip the wires near the passenger air bag electrical connector.



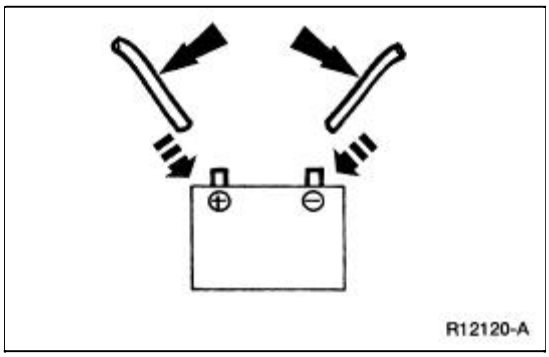
3. Obtain two wires (20 gauge minimum) at least 6.1 meters (20 feet) long and attach one end of each wire to the stripped ends of the passenger air bag module wires.



4. Place the air bag module on a flat surface in an open outdoor area with the deflector can facing downward.

5. Remain at least 6.1 meters (20 feet) away from the air bag module.

6. Deploy the air bag module by touching the other ends of the two wires to the terminals of a 12–volt battery.



7. To allow for cooling, wait at least ten minutes before approaching the deployed air bag.

8. Dispose of the deployed air bag module in the same manner as any other part to be scrapped.

Supplemental Restraint System (SRS) Deactivation and Reactivation

Special Tool(s)

 ST2506-A	Diagnostic Tool, Restraint System (2 Req'd) 418-F088 (105-R0012)

Deactivation

WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Carry a live air bag module with the air bag and trim cover pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Do not set a live air bag module down with the trim cover face down. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: After deployment, the air bag surface can contain deposits of sodium hydroxide, a product of the gas generant combustion that is irritating to the skin. Wash your hands with soap and water afterwards.

WARNING: Never probe the connectors on the air bag module. Doing so can result in air bag deployment, which can result in personal injury.

WARNING: The safety belt buckle pretensioner and safety belt retractor pretensioner are pyrotechnic devices. Never probe a pretensioner electrical connector. Doing so could result in pretensioner or air bag deployment and could result in personal injury.

WARNING: Vehicle sensor orientation is critical for proper system operation. If a vehicle equipped with an air bag supplemental restraint system (SRS) is involved in a collision, inspect the sensor mounting bracket and wiring pigtail for deformation. Replace and properly position the sensor or any other damaged supplemental restraint system (SRS) components whether or not the air bag is deployed.

WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

NOTE: If a seat equipped with a seat mounted side air bag and/or a safety belt pretensioner (if equipped) system is being serviced, **the air bag system must be deactivated.**

NOTE: Restraint system diagnostic tools **MUST** be installed under the seats in the seat side air bag (if equipped) and safety belt pretensioner (if equipped) to floor connectors.

NOTE: Diagnostics or repairs are not to be performed on a seat equipped with a seat side air bag with the seat in the vehicle. Prior to attempting to diagnose or repair a seat concern when equipped with a seat side air bag, the seat must be removed from the vehicle and the restraint system diagnostic tools must be installed in the seat side air bag electrical connectors. **The restraint system diagnostic tools must be removed prior to operating the vehicle over the road.**

NOTE: After diagnosing or repairing an SRS, **the restraint system diagnostic tools must be removed before operating the vehicle over the road.**

NOTE: After diagnosing or repairing a seat system, **the restraint system diagnostic tools must be removed before operating the vehicle over the road.**

NOTE: The SRS must be fully operational and free of faults before releasing the vehicle to the customer.

1. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

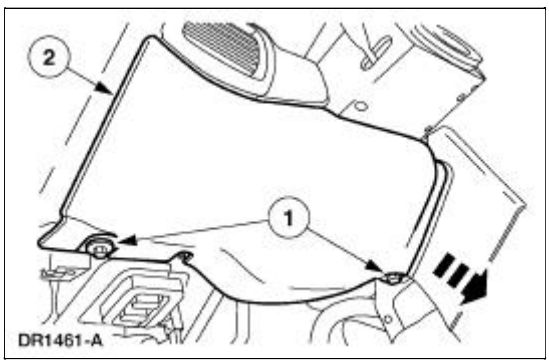
   Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

   The side air bag sensors are located at or near the base of the B-pillar.

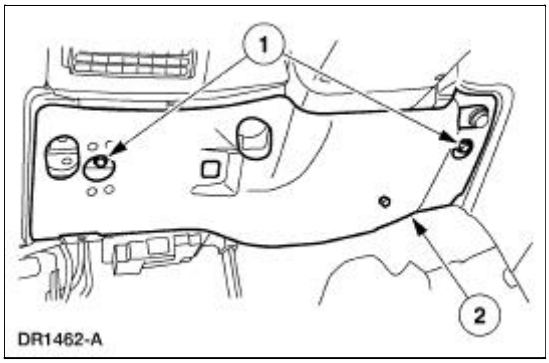
   To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

   Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

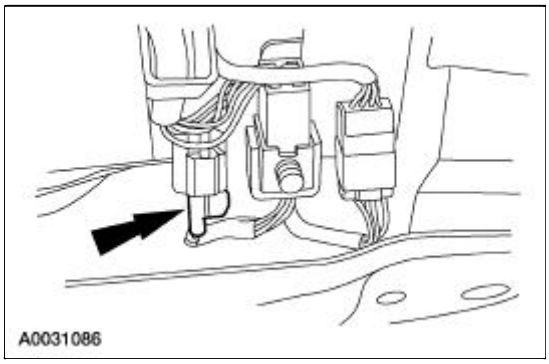
2. Remove the steering column opening lower finish panel.
   1. Remove the screws.
   2. Pull out to release the retaining clips and remove the steering column opening lower finish panel.



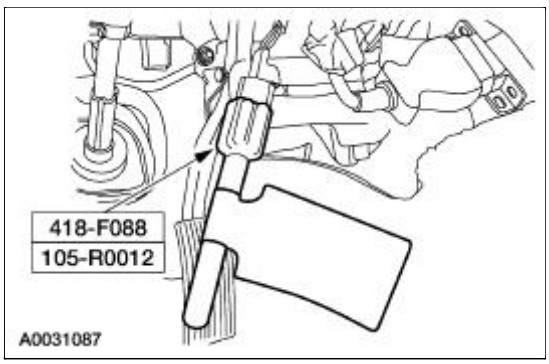
3. Remove the steering column opening lower reinforcement.
   1. Remove the bolts.
   2. Remove the steering column opening lower reinforcement.



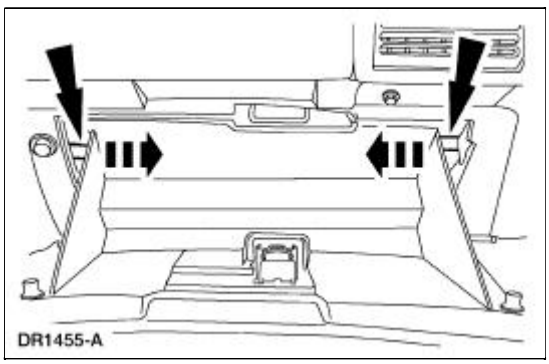
4. Pushing in on the release tab, disconnect the clockspring electrical connector at the base of the steering column.



5. Attach the restraint system diagnostic tool to the vehicle harness side of the clockspring electrical connector.



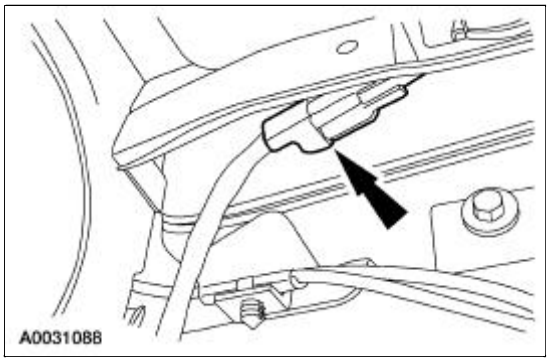
6. Open the glove compartment, push in on the tabs and open the glove compartment door to its fullest extent.



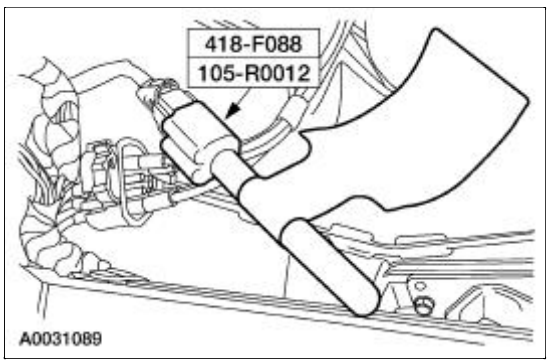
7. Remove the right hand A/C register duct.

- Remove the two screws retaining the duct to the A/C register.
- Separate the A/C duct at the air plenum and remove the duct.

8. Disconnect the passenger air bag module.



9. Attach the restraint system diagnostic tool to the vehicle harness side of the passenger air bag electrical connector.



10. Connect the battery ground cable. For additional information, refer to Section 414-01 .

11. With the restraint system diagnostic tools installed at all deployable devices, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

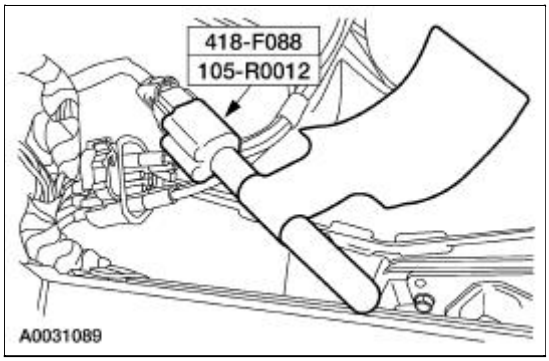
12. Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

Reactivation

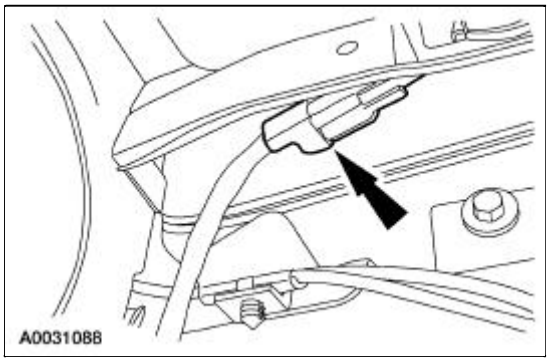
WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, and notes at the beginning of the deactivation procedure.

1. Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

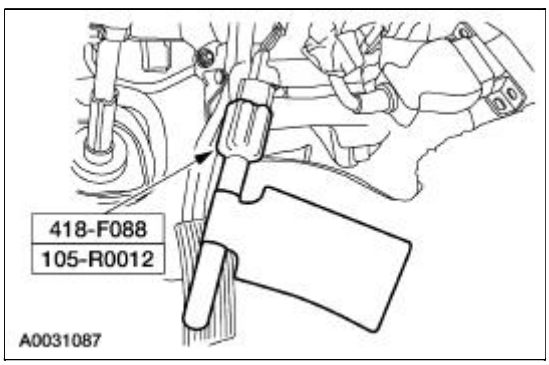
2. Remove the restraint system diagnostic tool from the passenger air bag module electrical connector.



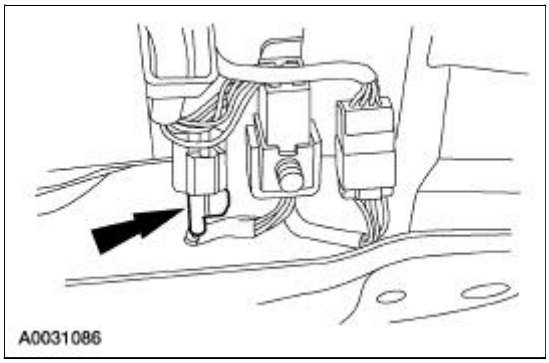
3. Connect the passenger air bag module electrical connector.



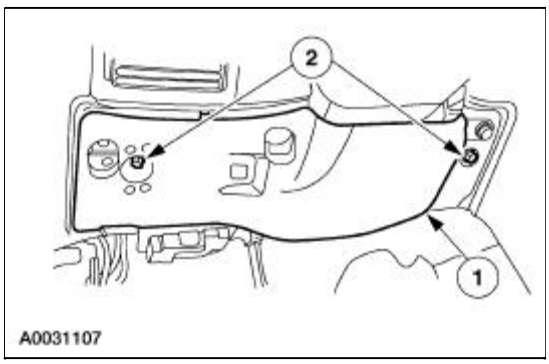
4. Install the right hand A/C register duct.
   - Connect the A/C duct at the air plenum.
   - Install the duct at the A/C register and install the two screws.
5. Close the glove compartment.
6. Remove the restraint system diagnostic tool from the clockspring electrical connector.



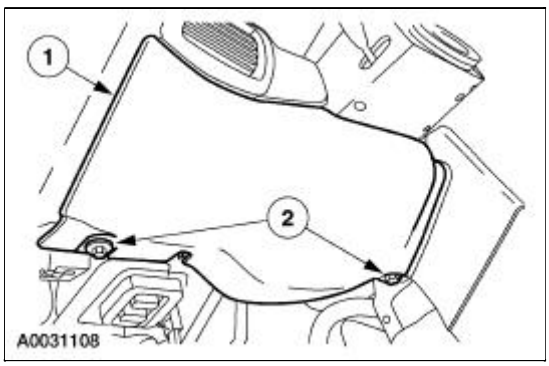
7. Connect the clockspring electrical connector at the base of the steering column.



8. Install the steering column opening lower reinforcement.
    1. Position the steering column opening lower reinforcement.
    2. Install the bolts.



9. Install the steering column opening lower finish panel.
    1. Align the steering column opening lower finish panel and push in, seating the retaining clips.
    2. Install the screws.



10. Connect the battery ground cable. For additional information, refer to Section 414-01 .

11. **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

    With all the restraint system diagnostic tools removed, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

Weld Nut Repair —"J" Nut, Restraints Control Module (RCM)

WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.

Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

The side air bag sensors are located at or near the base of the B-pillar.

To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

NOTE: There are two procedures to repair a vehicle having missing restraints control module attaching weld nut(s). Read both procedures before proceeding with the repair.

NOTE: If two or more weld nuts are missing, do not install the "J" nuts as outlined in this procedure. Weld nuts must be installed as outlined in Weld Nut Repair — Missing Weld Nut, Restraints Control Module (RCM).

NOTE: The following procedure applies to vehicles that have a rectangular hole in the sheet metal that is in close proximity to the missing weld nut.

1. Obtain a "J" nut (part number N623332-S301) or any of the following optional "J" nuts (part numbers: N623342-S101, N800854-S100, N800925-S100).

2. Obtain a 6 mm (0.24 in) grounding screw (part number N806327-S190) or equivalent.

3. Install the "J" nut through the rectangular hole in the sheet metal.

4. **NOTE:** Be sure the threaded portion of the "J" nut is aligned with the clearance hole in the sheet metal.

   Install the crash sensor.

5. Tighten the attaching screws to specification. For additional information, refer to Torque Specifications in this section.

Weld Nut Repair —Missing Weld Nut, Restraints Control Module (RCM)

WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.

Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

The side air bag sensors are located at or near the base of the B-pillar.

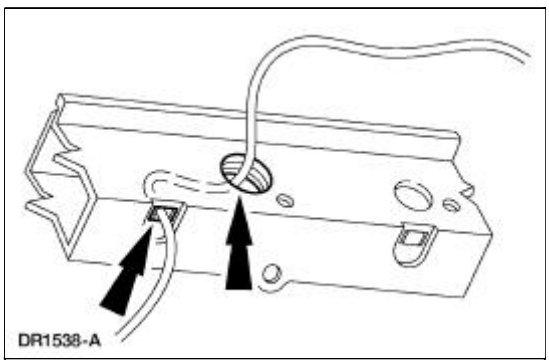
To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

NOTE: There are two procedures to repair a vehicle having missing restraints control module attaching weld nut(s). Read both procedures before proceeding with the repair.

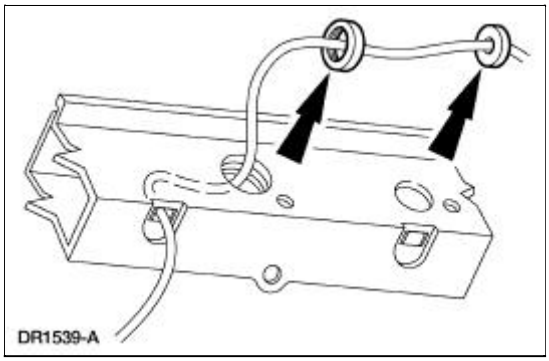
NOTE: If two or more weld nuts are missing, do not install the "J" nuts as outlined in Weld Nut Repair — "J" Nut, Restraints Control Module (RCM). Weld nuts must be installed as outlined in this procedure.

NOTE: Radiator support repair shown, others are similar.

1. Obtain a 6 mm (0.24 in) weld nut (part number N806285-S190).
2. Obtain a 6 mm (0.24 in) grounding screw (part number N806327-S190).
3. Route a sufficient length of copper welding wire through the weld nut clearance hole and back out an adjacent access hole.



4. Feed the copper welding wire through the weld nut, then through a standard flatwasher.



5. Secure the flatwasher so that it cannot be pulled off the end of the copper welding wire.
6. Pull the copper welding wire back through the clearance hole, allowing the weld nut and flatwasher to follow the copper welding wire through.
7. Position the weld nut to the weld nut clearance hole, firmly pulling on the copper welding wire allowing the secured flatwasher to hold the weld nut in position.
8. Holding the weld nut securely in place and using a MIG welder, weld in four places around the edge of the weld nut.
9. Metal finish as required.
10. Verify the nut is securely in place.
11. Install the crash sensor.
12. Tighten the attaching screws to specification. For additional information, refer to Torque Specifications in this section.

Weld Nut Repair —Stripped Weld Nut, Restraints Control Module (RCM)

WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.

Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

The side air bag sensors are located at or near the base of the B-pillar.

To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

1. Obtain an 8 mm (0.32 in) grounding screw (part number N802455-S190).
2. Drill out the internal threads of the stripped-out weld nut to 7.37 mm (0.29 in) using a letter "L" size drill bit.
3. Position the crash sensor to the vehicle.
4. Install the 8 mm (0.32 in) grounding screw into the drilled-out weld nut.
5. Install the remaining attaching screws.
6. Tighten the attaching screws to specification. For additional information, refer to Torque Specifications in this section.

Restraints Control Module (RCM)

Special Tool(s)

 ST2506-A	Diagnostic Tool, Restraint System (2 Req'd) 418-F088 (105-R0012)

Removal

WARNING: The restraints control module (RCM) orientation is critical for proper system operation. If a vehicle equipped with an air bag supplemental restraint system (SRS) has been involved in a collision in which the center tunnel area has been damaged, inspect the mounting and bracket for deformation. If damaged, the RCM must be replaced whether or not the air bags have deployed. In addition, make sure the area of the RCM mounting is restored to its original condition.

WARNING: Vehicle sensor orientation is critical for proper system operation. If a vehicle equipped with an air bag supplemental restraint system (SRS) is involved in a collision, inspect the sensor mounting bracket and wiring pigtail for deformation. Replace and properly position the sensor or any other damaged supplemental restraint system (SRS) components whether or not the air bag is deployed.

WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

CAUTION: Electronic modules are sensitive to static electrical charges. If exposed to these charges, damage can result.

NOTE: Repair is made by installing a new part only. If the new part does not correct the condition, install the original part and perform the diagnostic procedure again.

1. Prepare the vehicle for restraints control module (RCM) removal.
    1. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

       Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

       The side air bag sensors are located at or near the base of the B-pillar.

       To deplete the backup power supply energy, disconnect the battery ground cable

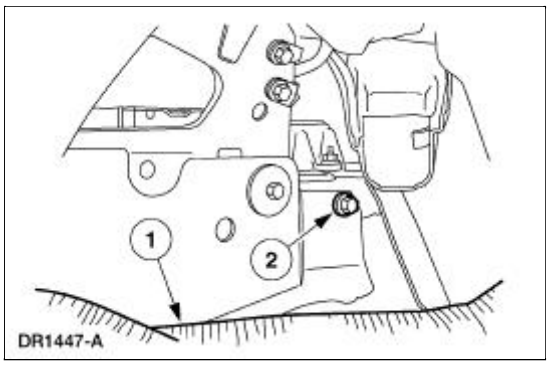
and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

Disconnect the battery ground cable (14301) and wait at least one minute. For additional information, refer to Section 414-01 .

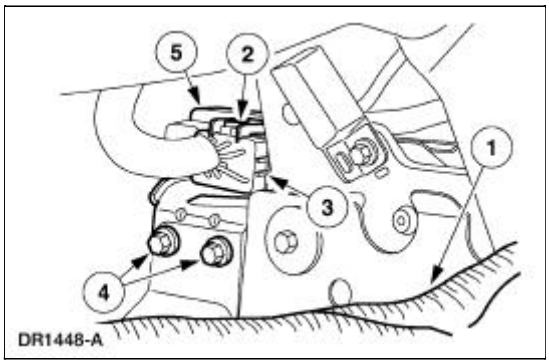
2. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

   Deactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.

2. Remove the right hand restraints control module (RCM) bracket retaining bolt.
   1. Position the carpet back at the right hand side of the instrument panel (I/P) center support bracket.
   2. Remove the RCM bracket retaining bolt.



3. Remove the RCM with bracket.
   1. Position the carpet back at the left hand side of the I/P center support bracket.
   2. Disengage the RCM electrical connector locking clip.
   3. Disconnect the RCM electrical connector.
   4. Remove the two retaining bolts.
   5. Remove the RCM with bracket.



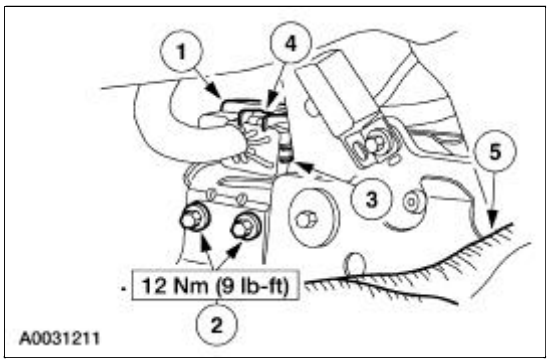
Installation

WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions and notes at the beginning of the removal procedure.

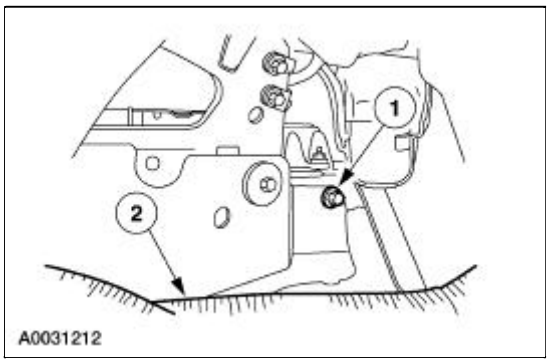
1. **WARNING: The tightening torque of the air bag restraints control module (RCM) retaining bolts is critical for correct system operation.**

Connect the RCM.

1. Position the RCM.
2. Install the bolts.
3. Connect the RCM electrical connector.
4. Slide and engage the RCM electrical connector locking clip.
5. Reposition the carpet.



2. Install the RCM.
    1. Install the bolt.
    2. Reposition the carpet.



3. Connect the battery ground cable. For additional information, refer to Section 414-01 .

4. With the restraint system diagnostic tools installed at all deployable devices, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

5. Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

6. Restore the vehicle to operating condition.
    1. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

        Reactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.
    2. **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from the vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

        With all the restraint system diagnostic tools removed, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental

Restraint System (SRS) in the Diagnosis and Testing portion of this section.

Driver Air Bag Module

Special Tool(s)

 ST2506-A	Diagnostic Tool, Restraint System (2 Req'd) 418-F088 (105-R0012)

Removal

WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Carry a live air bag module with the air bag and trim cover pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Do not set a live air bag module down with the trim cover face down. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: After deployment, the air bag surface can contain deposits of sodium hydroxide, a product of the gas generant combustion that is irritating to the skin. Wash your hands with soap and water afterwards.

WARNING: Never probe the connectors on the air bag module. Doing so can result in air bag deployment, which can result in personal injury.

WARNING: Air bag modules with discolored or damaged trim covers must be replaced, not repainted.

WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

NOTE: Repair is made by installing a new part only. If the new part does not correct the condition, install the original part and perform the diagnostic procedure again.

1. Prepare the vehicle for driver air bag module removal.
    1. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

The side air bag sensors are located at or near the base of the B-pillar.

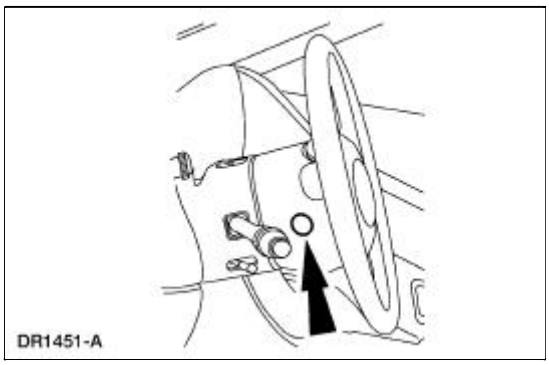
To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

Disconnect the battery ground cable (14301) and wait at least one minute. For additional information, refer to Section 414-01 .

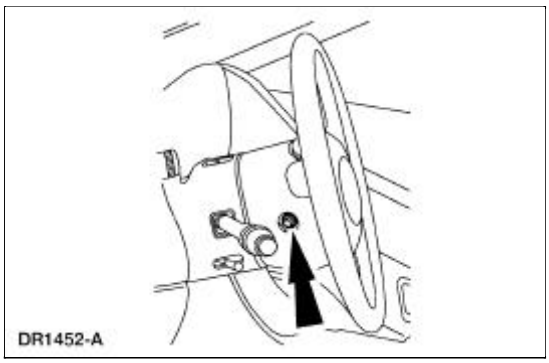
2. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

   Deactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.

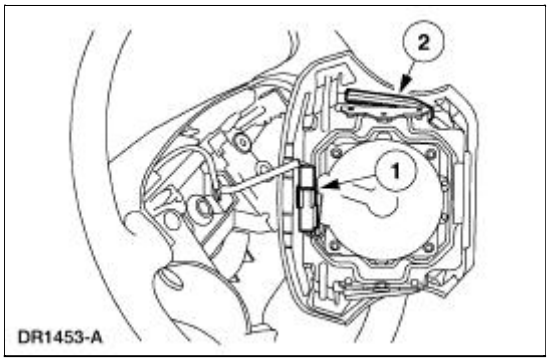
2. Remove the two steering wheel plugs.



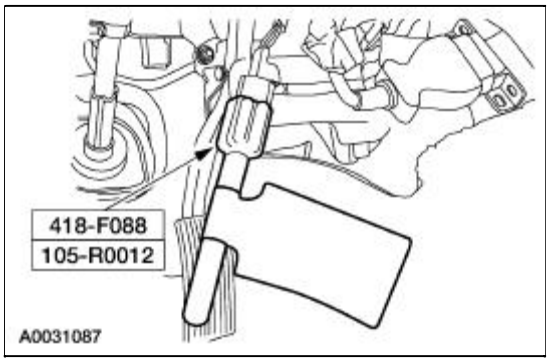
3. Remove the two driver air bag module retaining bolts (one shown).



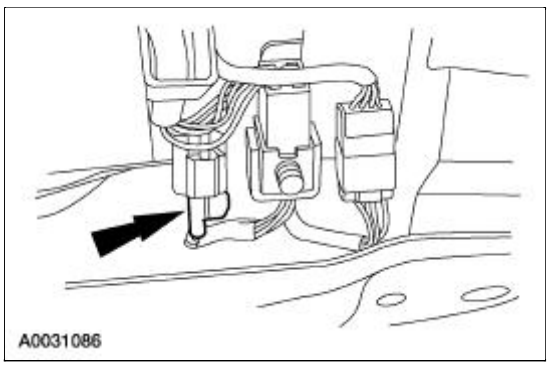
4. Remove the driver air bag module.
   1. Disconnect the driver air bag module electrical connector.
   2. Remove the driver air bag module.



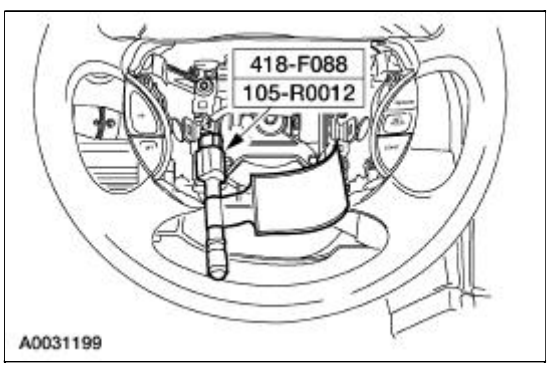
5. Remove the restraint system diagnostic tool from the vehicle harness side of the clockspring electrical connector at the base of the steering column.



6. Connect the clockspring electrical connector at the base of the steering column.



7. Attach the restraint system diagnostic tool to the clockspring electrical connector at the top of the steering column.



8. Connect the battery ground cable. For additional information, refer to Section 414-01 .

9. With the restraint system diagnostic tools installed at all deployable devices, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

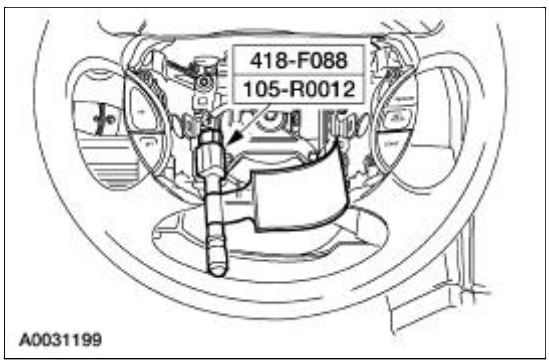
10. Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

Installation

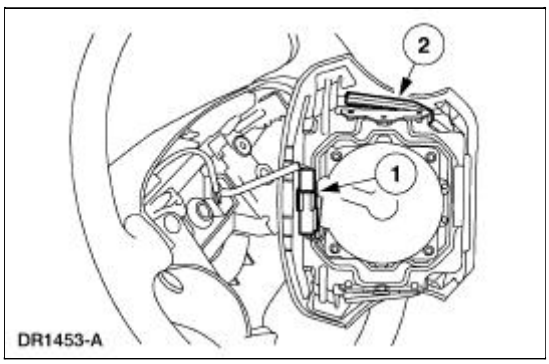
WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions and notes at the beginning of the removal procedure.

1. Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

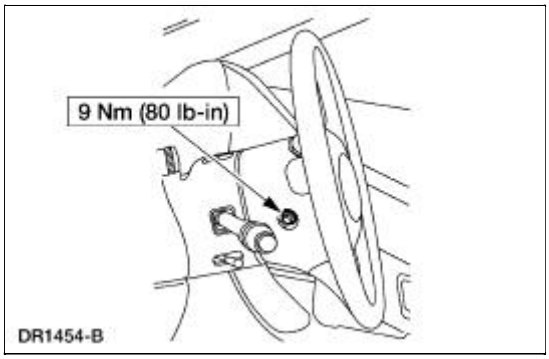
2. Remove the restraint system diagnostic tool from the clockspring electrical connector at the top of the steering column.



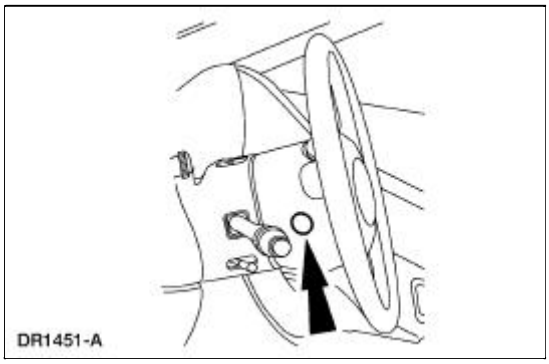
3. Connect the driver air bag module.
    1. Connect the driver air bag module electrical connector.
    2. Position the driver air bag module to the steering wheel.



4. Install the two driver air bag module bolts.



5. Install the two steering wheel back cover plugs.



6. Connect the battery ground cable. For additional information, refer to Section 414-01 .

7. With the restraint system diagnostic tools still installed at the remaining deployable devices, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

8. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

   Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

   The side air bag sensors are located at or near the base of the B-pillar.

   To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

   Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

9. Restore the vehicle to operating condition.
   1. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

      Reactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.

2.  **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from the vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

   With all the restraint system diagnostic tools removed, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

Passenger Air Bag Module

Special Tool(s)

 ST2506-A	Diagnostic Tool, Restraint System (2 Req'd) 418-F088 (105-R0012)

Removal

WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Carry a live air bag module with the air bag and deployment door pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Do not set a live air bag module down with the deployment door face down. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: After deployment, the air bag surface can contain deposits of sodium hydroxide, a product of the gas generant combustion that is irritating to the skin. Wash your hands with soap and water afterwards.

WARNING: Never probe the connectors on the air bag module. Doing so can result in air bag deployment, which can result in personal injury.

WARNING: Air bag modules with discolored or damaged trim covers must be replaced, not repainted.

WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

NOTE: Repair is made by installing a new part only. If the new part does not correct the condition, install the original part and perform the diagnostic procedure again.

1. Prepare the vehicle for passenger air bag module removal.
    1. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

The side air bag sensors are located at or near the base of the B-pillar.

To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

Disconnect the battery ground cable (14301) and wait at least one minute. For additional information, refer to Section 414-01 .

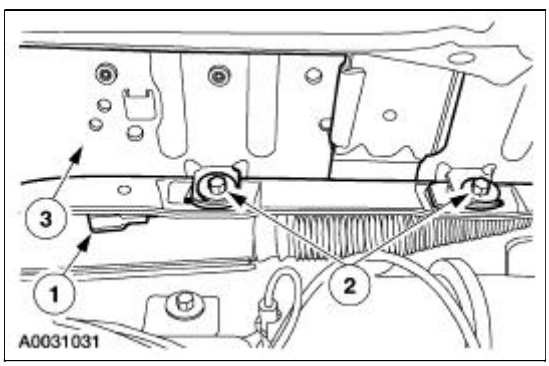
2. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

   Deactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.

2. **CAUTION: Do not handle the passenger air bag module by grabbing the edges of the deployment doors.**

Remove the passenger air bag module.

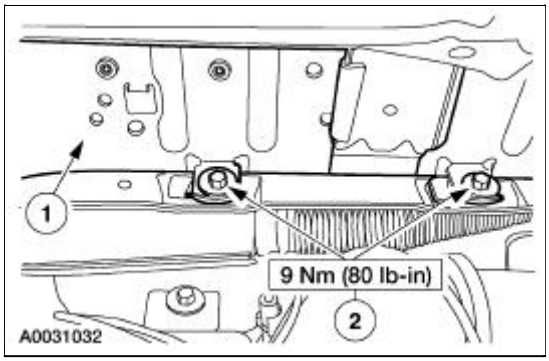
1. Remove the passenger air bag module electrical connector from the instrument panel bracket.
2. Remove the passenger air bag module bolts.
3. Placing one hand in the glove compartment opening, push the passenger air bag module out and remove it.



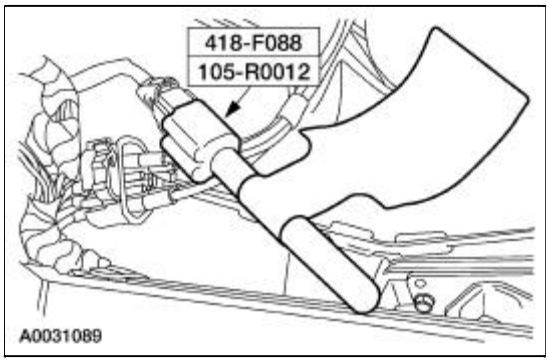
Installation

WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions and notes at the beginning of the removal procedure.

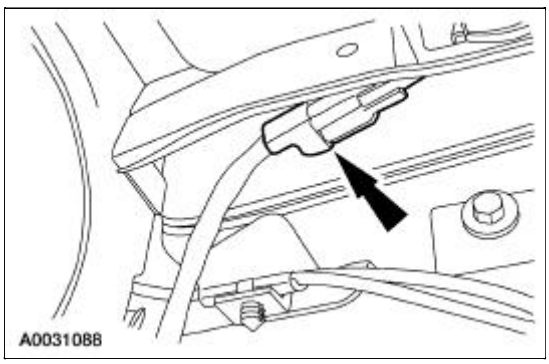
1. Install the passenger air bag module.
   1. Position the passenger air bag module into the instrument panel.
   2. Install the bolts.



2. Remove the restraint system diagnostic tool from the vehicle harness side of the passenger air bag electrical connector.



3. Connect the passenger air bag module electrical connector. Install the passenger air bag module electrical connector and pin-type retainer to the instrument panel frame.



4. Close the glove compartment.

5. Connect the battery ground cable. For additional information, refer to Section 414-01 .

6. With the restraint system diagnostic tools still installed at the remaining deployable devices, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

7. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

   Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

The side air bag sensors are located at or near the base of the B-pillar.

To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

8. Restore the vehicle to operating condition.
    1.  **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

        Reactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.
    2.  **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from the vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

        With all the restraint system diagnostic tools removed, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.

Clockspring

Special Tool(s)

 ST2506-A	Diagnostic Tool, Restraint System (2 Req'd) 418-F088 (105-R0012)

Removal

WARNING: Always wear safety glasses when repairing an air bag supplemental restraint system (SRS) vehicle and when handling an air bag module. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Carry a live air bag module with the air bag and trim cover pointed away from your body. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: Do not set a live air bag module down with the trim cover face down. This will reduce the risk of injury in the event of an accidental deployment.

WARNING: After deployment, the air bag surface can contain deposits of sodium hydroxide, a product of the gas generant combustion that is irritating to the skin. Wash your hands with soap and water afterwards.

WARNING: Never probe the connectors on the air bag module. Doing so can result in air bag deployment, which can result in personal injury.

WARNING: Air bag modules with discolored or damaged trim covers must be replaced, not repainted.

WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.

NOTE: Repair is made by installing a new part only. If the new part does not correct the condition, install the original part and perform the diagnostic procedure again.

1. Prepare the vehicle for clockspring removal.
    1. **WARNING: To avoid accidental deployment and possible personal injury, the backup power supply must be depleted before repairing or replacing any front or side air bag supplemental restraint system (SRS) components and before servicing, replacing, adjusting or striking components near the front or side air bag sensors, such as doors, instrument panel, console, door latches, strikers, seats and hood latches.**

Please refer to the appropriate vehicle shop manual to determine location of the front air bag sensors.

The side air bag sensors are located at or near the base of the B-pillar.

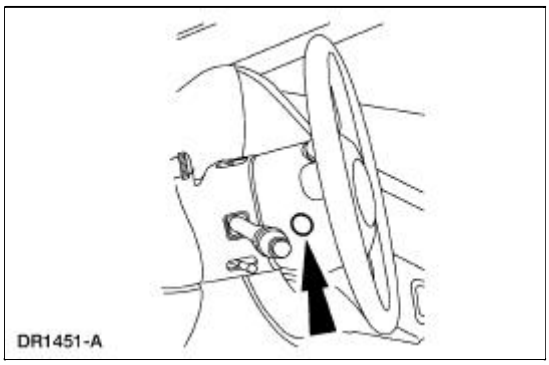
To deplete the backup power supply energy, disconnect the battery ground cable and wait at least one minute. Be sure to disconnect auxiliary batteries and power supplies (if equipped).

Disconnect the battery ground cable (14301) and wait at least one minute. For additional information, refer to Section 414-01 .

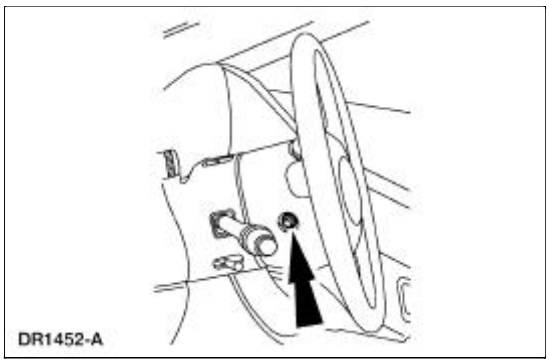
2. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

   Deactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.

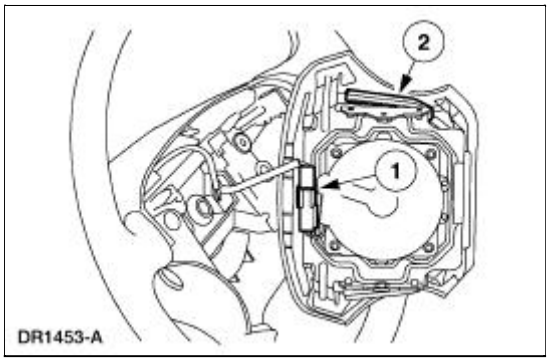
2. Remove the two steering wheel back cover plugs.



3. Remove the two driver air bag module retaining bolts.



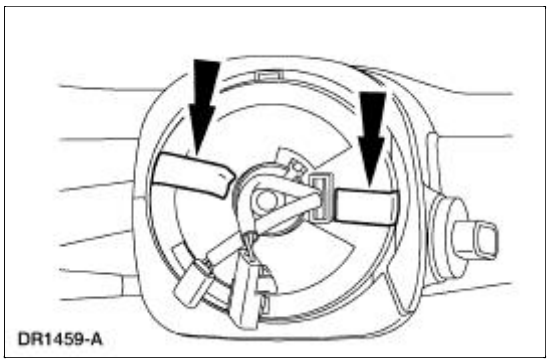
4. Remove the driver air bag module.
   1. Disconnect the driver air bag module electrical connector.
   2. Remove the driver air bag module.



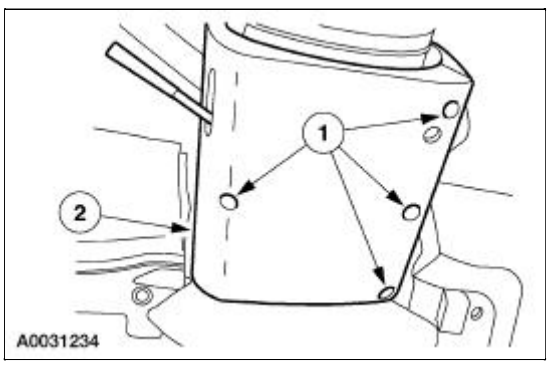
5. **NOTE:** Make sure the wheels (1007) are in the straight-ahead position.

   Remove the steering wheel (3600). For additional information, refer to Section 211-04 .

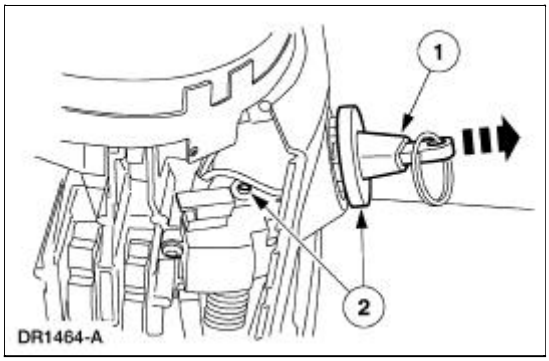
6. Apply two strips of masking tape across the clockspring (14A664) to prevent accidental rotation when the clockspring is removed.



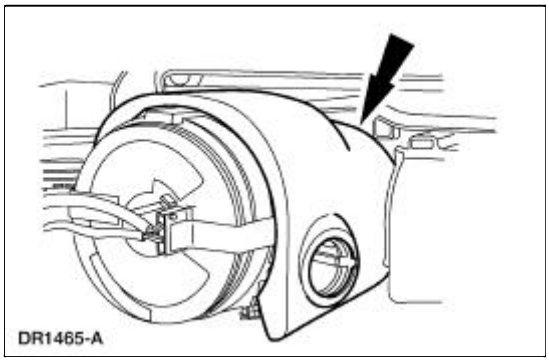
7. Remove the lower steering column shroud (3530).
   1. Remove the tilt wheel handle and shank (3F609).
   2. Remove the four screws.
   3. Remove the lower steering column shroud.



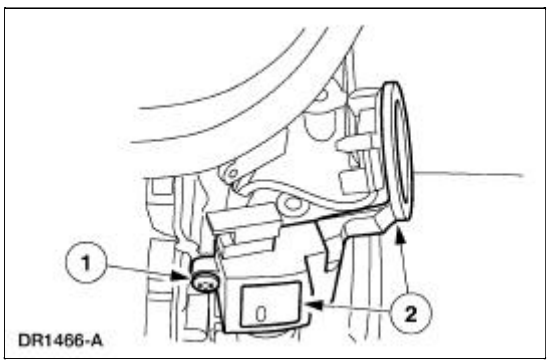
8. Remove the ignition switch lock cylinder (11582).
   1. Position the ignition switch lock cylinder to the RUN position.
   2. Using the suitable tool, push upward on the cylinder release tab while pulling the ignition switch lock cylinder outward.



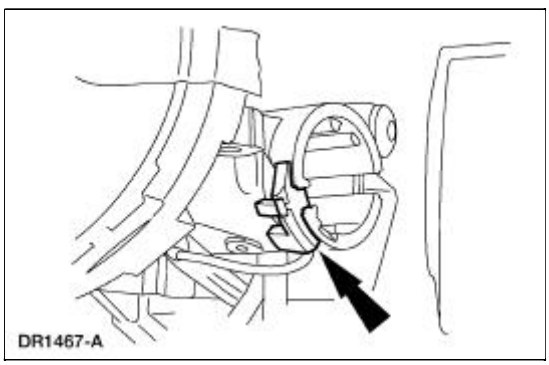
9. Raise the upper steering column shroud.



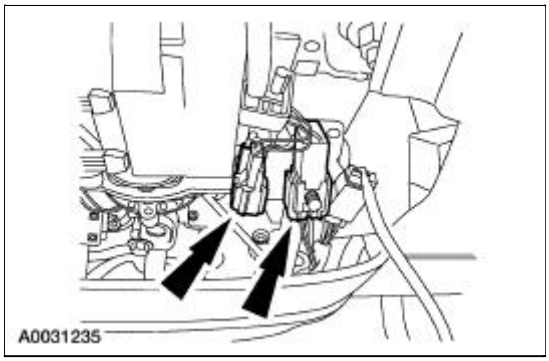
10. Remove the passive anti-theft system (PATS) transmitter.
    1. Remove the PATS transmitter retaining screw.
    2. Position the PATS transmitter out of the way.



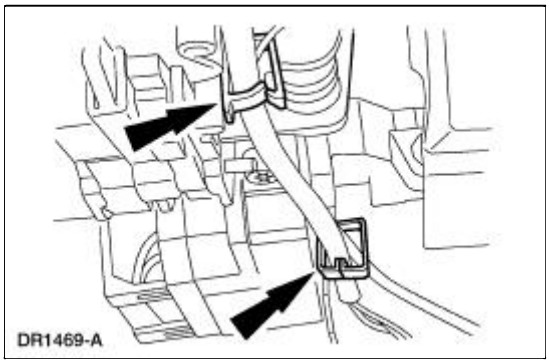
11. Remove the key-in-ignition warning indicator switch.



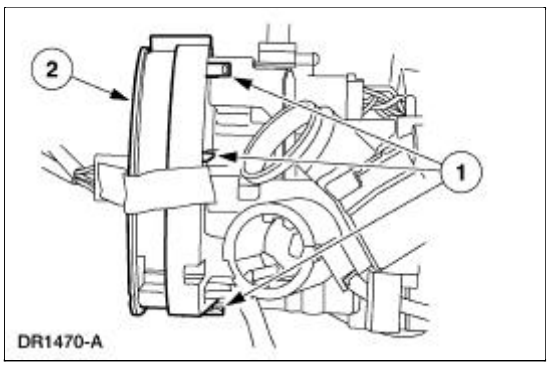
12. Remove the two clockspring electrical connectors from the bracket. Disconnect the remaining electrical connector.



13. Remove the wire harness from its holders.



14. Remove the clockspring.
    1. Pry the clockspring retaining clips loose.
    2. Remove the clockspring.



Installation

WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions and notes at the beginning of the removal procedure.

Vehicles receiving a new clockspring

1. **NOTE:** A new clockspring is supplied in a centralized position and held there with a key.

   Remove the key from the clockspring, holding the rotor in its centralized position.
   - Do not allow the clockspring rotor to turn.

Vehicles needing clockspring recentering

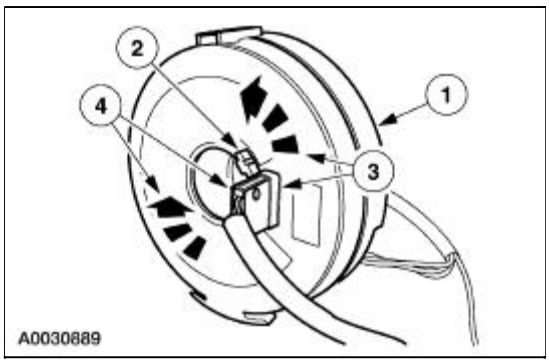
2. **WARNING: Incorrect centralization may result in premature component failure. If in doubt when centralizing the clockspring, repeat the centralizing procedure. Failure to follow this instruction may result in personal injury.**

   CAUTION: Make sure the road wheels are in the straight ahead position.

   NOTE: If a clockspring has rotated out of center, follow through with this step.

   Centralize the clockspring.
   1. Hold the clockspring outer housing stationary.
   2. Depress the clockspring locking tab to release the rotor.
   3. **CAUTION: Overturning will destroy the clockspring. The internal ribbon wire acts as the stop and can be broken from its internal connection.**

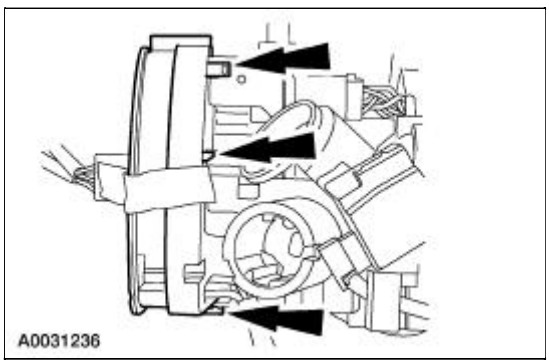
      While holding the clockspring locking tab in the released position, turn the rotor counterclockwise, carefully feeling for the ribbon wire to run out of length, and a slight resistance is felt. Stop turning at this point.
   4. While holding the clockspring locking tab in the released position, turn the clockspring clockwise approximately three turns. This is the center point of the clockspring.
      - Release the clockspring locking tab. Do not allow the rotor to turn from this position.



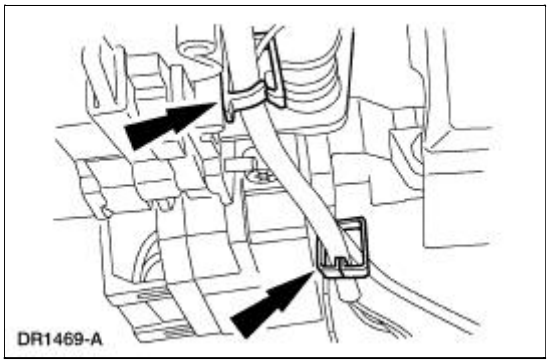
All vehicles

3. **NOTE:** Slight turning of the clockspring rotor is allowable for alignment purposes to the steering column.

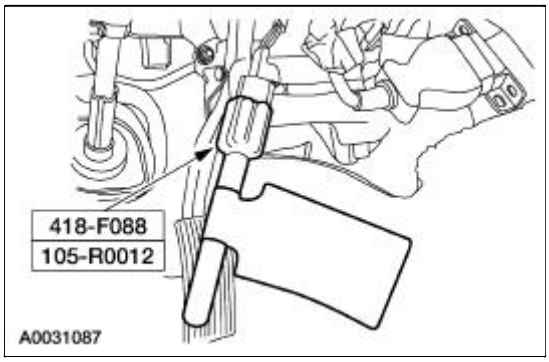
   With the flats of the clockspring aligned to the flats of the steering column, slide the clockspring onto the steering column engaging the retaining tabs.



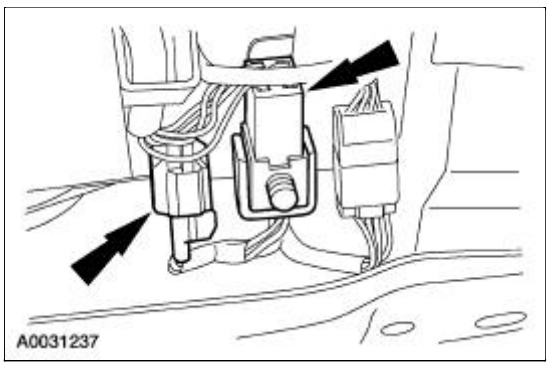
4. Route the clockspring wire harness down the side of the steering column and into the holders.



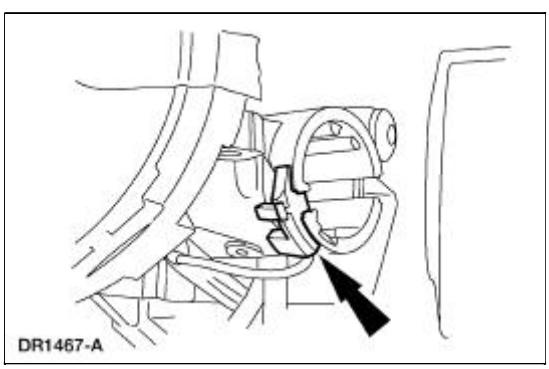
5. Remove the restraint system diagnostic tool from the vehicle harness side of the clockspring electrical connector.



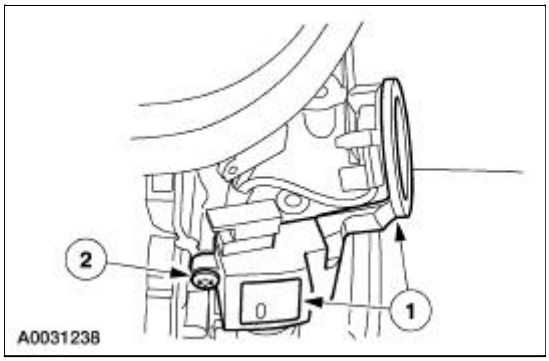
6. Connect the two clockspring electrical connectors. Position the clockspring electrical connectors onto the bracket.



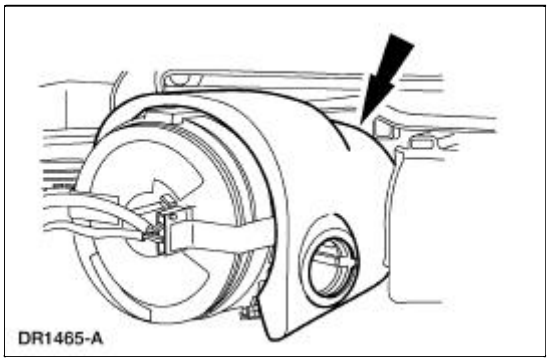
7. Install the key-in-ignition warning indicator switch.



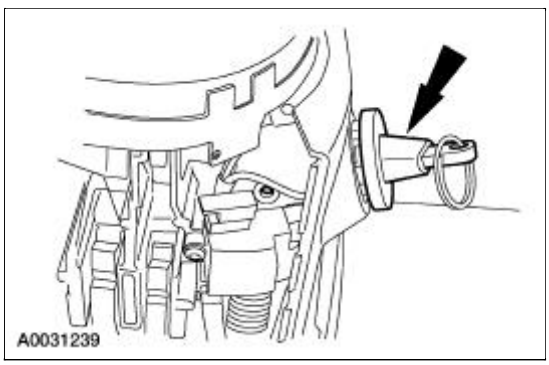
8. Install the passive anti-theft system (PATS) transmitter.
    1. Position the PATS transmitter to the steering column.
    2. Install the screw.



9. Reposition the upper steering column shroud.



10. Install the ignition switch lock cylinder.

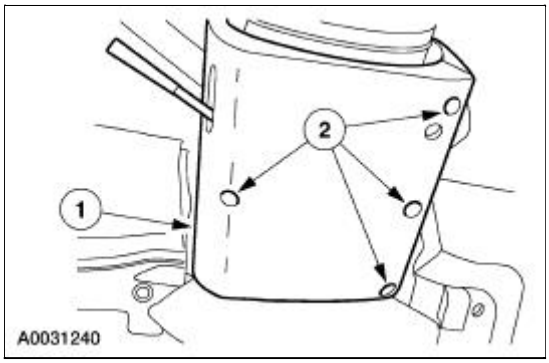


Vehicle repairs reusing the same clockspring

11. Remove the tape applied during clockspring removal.

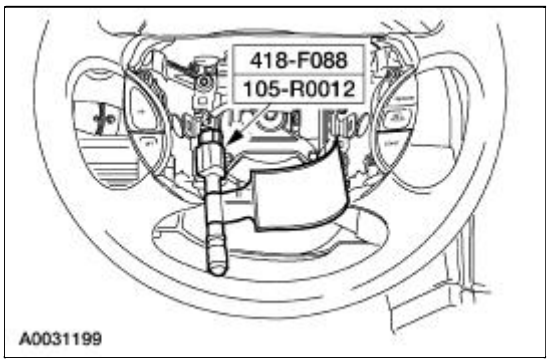
All vehicles

12. Install the lower steering column shroud.
    1. Position the lower steering column shroud.
    2. Install the screws.



13. Install the steering wheel. Do not install the driver air bag module at this time. For additional information, refer to Section 211-04 .

14. Attach the restraint system diagnostic tool to the clockspring electrical connector at the top of the steering column.

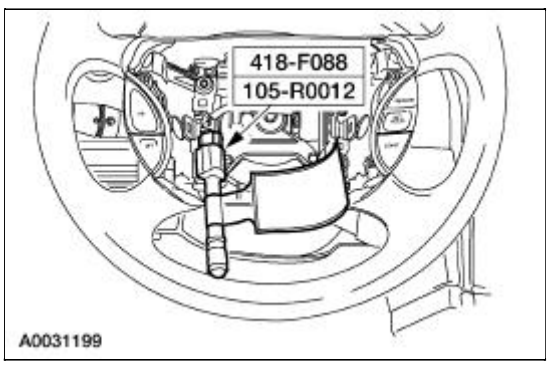


15. Connect the battery ground cable. For additional information, refer to Section 414-01 .

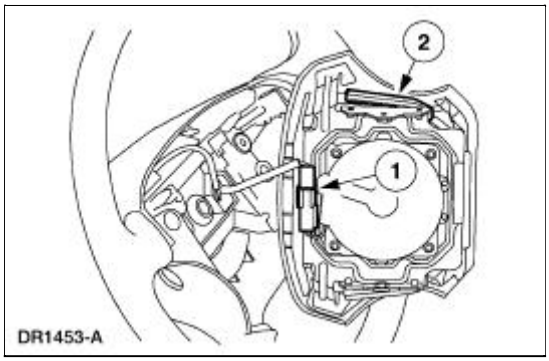
16. With the restraint system diagnostic tools installed at all deployable devices, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) , in the Diagnosis and Testing portion of this section.

17. Disconnect the battery ground cable and wait at least one minute. For additional information, refer to Section 414-01 .

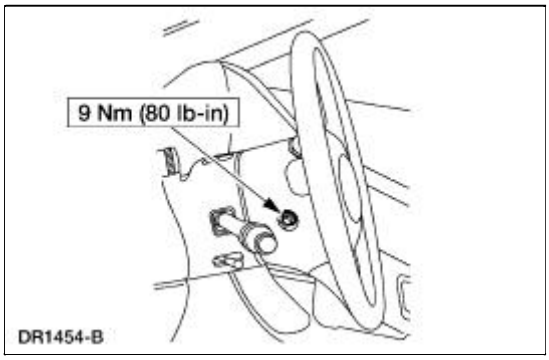
18. Remove the restraint system diagnostic tool from the clockspring electrical connector at the top of the steering column.



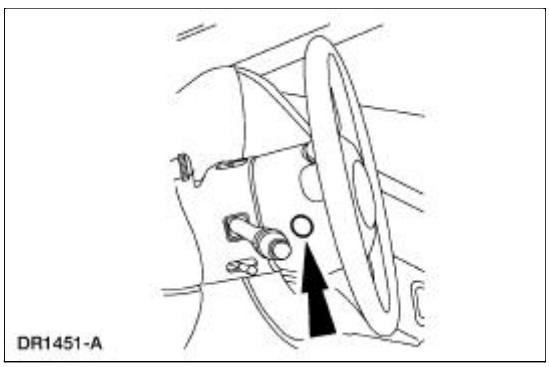
19. Connect and position the driver air bag module to the steering wheel.
    1. Connect the driver air bag module electrical connector.
    2. Position the driver air bag module to the steering wheel.



20. Install the two driver air bag module bolts.



21. Install the two steering wheel back cover plugs.



22. Restore the vehicle to operating condition.
    1. **WARNING: To reduce the risk of serious personal injury, read and follow all warnings, cautions, notes, and instructions in the supplemental restraint system (SRS) deactivation/reactivation procedure.**

       Reactivate the supplemental restraint system (SRS). For additional information, refer to Supplemental Restraint System (SRS) Deactivation and Reactivation in the General Procedures portion of this section.
    2. **WARNING: The restraint system diagnostic tool is for restraint system service only. Remove from the vehicle prior to road use. Failure to remove could result in injury and possible violation of vehicle safety standards.**

       With all the restraint system diagnostic tools removed, prove out the supplemental restraint system (SRS). For additional information, refer to Air Bag Supplemental Restraint System (SRS) in the Diagnosis and Testing portion of this section.